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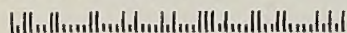
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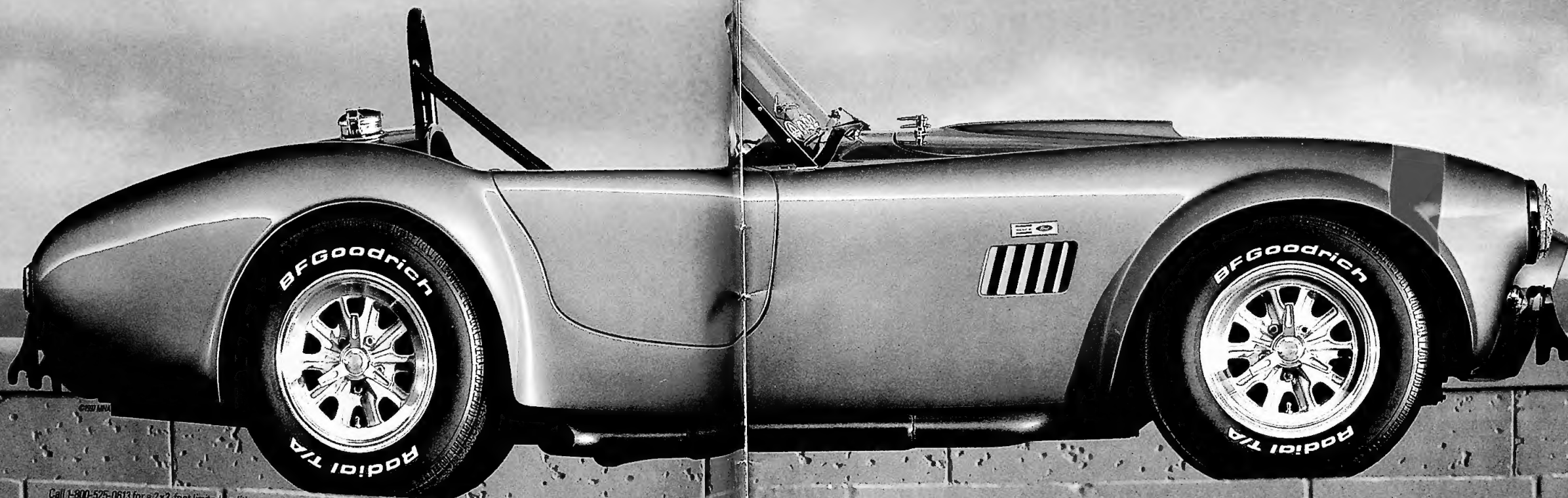
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# KIT CAR

THE CAR BUILDER'S AUTHORITY

May 1997 • Volume 16, Number 3

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KIT CAR, MAY 1997, VOLUME 16, NUMBER 3 (ISSN 1072-7881). Copyright 1997, is published bimonthly in January, March, May, July, September, and November by Petersen Publishing Company, L.L.C., 6420 Wilshire Blvd., Los Angeles, CA 90048-5515. Phone 213/782-2000. All rights reserved. Periodicals postage paid at Los Angeles, CA 90052 and at additional mailing offices. Subscription rates for 1 year (6 issues): U.S., APO, FPO, and U.S. possessions \$19.94. Canada \$27.94 (includes surface mail postage to Canada and GST-Reg. #R124632655). All other countries \$29.94. For subscription inquiries within the U.S. please call 800/500-5227. For subscription inquiries outside the U.S. call 303/678-0354. POSTMASTER: Send address changes to Kit Car, P.O. Box 53949, Boulder, CO 80328-3949. This book is published with the understanding that the information presented herein is from many varied sources for which there can be no warranty or responsibility by the publisher regarding accuracy or completeness.



**16 Grand Sport Snake Stalker**



**22 Fearsome Spyder**



**68 Rodster-Sport/Utility in Disguise**

**On the Cover:** The storied Grand Sport racing program had one purpose: beating the Cobras. Unfortunately, it was scuttled before it really got started. We showcase a trio of awesome replicas in an article titled "Snake Stalkers," beginning on page 16. Photo by David Fetherston. In another Grand sense, the inset photo shows a new convertible Countach from D&R that's powered by a Buick Grand National turbo motor. Photo by Harold Pace.

# What does Car & Driver Magazine say about Everett-Morrison's **Cobra** REPLICA 427SC



"... the logical way to do a better Cobra..."

"...we have an Everett-Morrison kit designed to accept the current Corvette suspension. Owner Larry Rea of Cedar Park, Texas, built it with his son, Lucas, in ten days."

"Everett-Morrison offers a broader variety of chassis possibilities than any other kit-maker I've found."

"The suspension has the fast, 13:1 power steering and the after-1988 Corvette rear geometry."

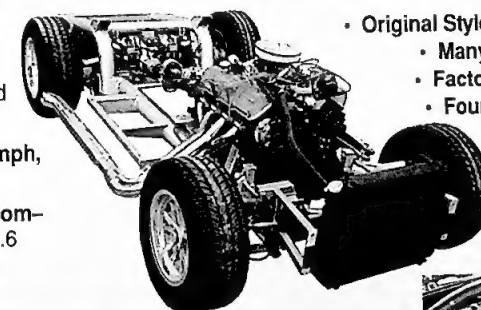
"Braking was exceptionally good at 161 feet from 70 mph, and 1.04g was measured on the skidpad."

"This car holds our record for fastest through the slalom—averaging 71.2 mph (the Nissan 300ZX Turbo did it at 69.6 mph, the old record)." Steering response, though, was quicker than lightning."

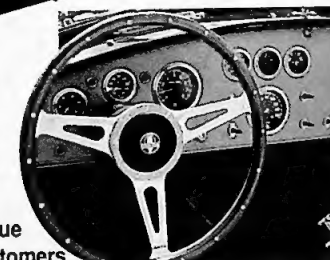
"Everything about the car is skewed in the direction of steering quickness... its light weight, its rear weight bias, its power steering, its short wheelbase, and its low-profile tires on wide wheels. The combination makes a standard Corvette feel as lethargic as a Limousine."

"... the Corvette suspension was more composed than any of the others."

Car and Driver Magazine, December, 1991.



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# DRIVER'S SIDE

## It's Showtime

It's a little difficult to be thinking about spring and summer activities right now, what with all the gloomy skies and drizzling rain we've had here in Southern California as this is being written. But our cover date shows that it's showtime, or at least time to start thinking about what's going on in the display part of the kit world.

Of course, the biggest shows, Knott's Berry Farm (Buena Park, California) Fun Under the Sun (April 26-27), put on by the Association of Handcrafted Automobiles (AHA), and the Carlisle (Pennsylvania) Import-Kit/Replicar Nationals (May 9-11), are right on top of us and should be even bigger



and better this year. Both shows draw lots of kit and accessory manufacturers, in addition to kit-car clubs, cars for sale, and plenty to see and do. They are also excellent for gathering with fellow kit-car enthusiasts and, more importantly perhaps, getting some valuable ideas, tips, and tricks on how to do things. Both of these shows have also become the venues for introducing new products to the marketplace. And Carlisle's show includes a huge swap meet well worth visiting.

Unlike the street rodders, VW enthusiasts, hot rodders, and sport truckers, kit-car fans just don't have the volume of shows and events across the country where we can show up to do some bench racing, swap lies, and run the dust mops over our gleaming fiberglass. There are a few club shows; however, they tend to be—with a couple of notable exceptions—very regional in nature. We as an industry have tried the kit-

car association route, and while some good shows came out of those groups, the groups themselves were short-lived, and thus the venues went away as well.

There is a great need for more kit-car shows, particularly in the southeastern part of the country and in the Midwest. It would take an experienced group, however (like the AHA, for example), to handle the logistics, promotion, and all the details to pull it off as successfully as they have with the Knott's Berry Farm show for the past 18 years. Doing it long-distance would no doubt pose some added headaches, but not insurmountable ones. Surely a collaborative effort between the AHA and a regional club or show organizer would be achievable. After all, the AHA works closely with the Arizona Kit Car Club to put on the popular Laughlin, Nevada, show.

There is another kind of show that holds even more attraction for us, and that is a long-distance cruise. On a small scale, you have groups such as the Oklahoma Kit Car Club that plan an annual trip to some fun, distant location, and (whether they want to or not) hold a mini kit-car show every time they stop. On a grander scale, and an event that we are very seriously considering participating in with one of our own kit cars, is sister magazine *Hot Rod's* Power Tour. It's a 10-day romp from the Petersen's Automotive Museum in Los Angeles to Mt. Clemens, Michigan, with stops in Las Vegas; Grand Junction and Denver, Colorado; Goodland, Kansas; Kansas City, Missouri; St. Louis; and Springfield and Lansing, Illinois.

Showing off is great fun, and we'd like to see more of it. Let us know what's going on, but remember that we are working at least three months ahead, so you need to get event dates in very early to allow enough time to announce your event in the magazine. In the meantime, we'll keep you posted from this side as we learn of more shows, trips, and fun ways to use our cars. —Jim Youngs

## KIT CAR

THE CAR BUILDER'S AUTHORITY

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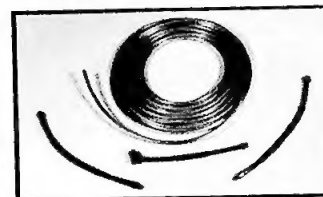
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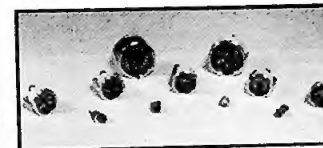
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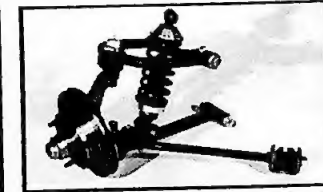
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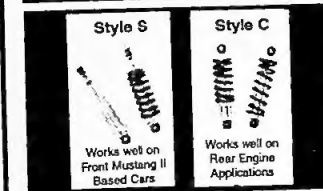
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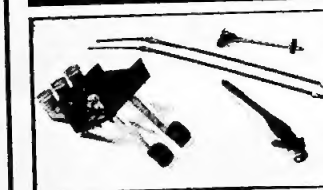
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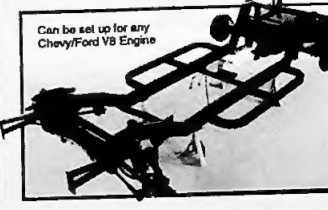


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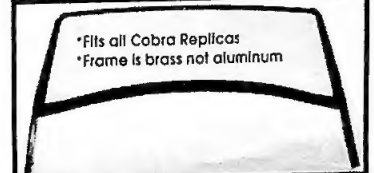
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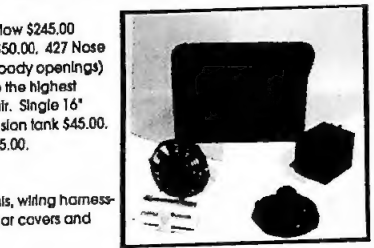
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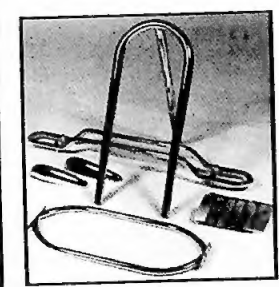
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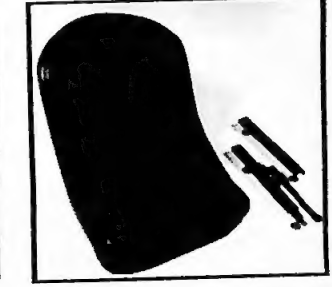
\*Fits all Cobra Replicas  
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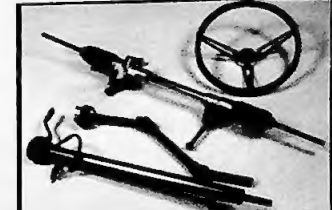
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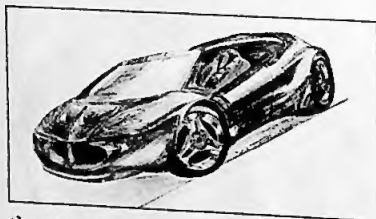
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# MAILBOX

## Lada Talent

All my dreams are to be a car designer. I am only 17 years old, and I have done many of my ideas on paper. I have designed many different cars. This one is the "Lada Altair" that I designed for your magazine, *Kit Car*. If you guys like it,



then make yourself a kit. I just gave you an idea, and I think it is not only one of my best ideas, but it should be on our streets soon.

Vitaliy Iyerewalimets  
Everett, WA

Thanks for the cool roadster design. We're wondering, though, where we're going to find a Lada donor car and, if we find one, what kind of performance we can expect. Would a Fiero be a good substitute? Keep up the good work—it appears you have a lot of talent.

## Four-Door T

I am interested in building a Bucket T roadster. I need two full seats and four doors. I would prefer a '27-'29 Ford or early-'30s Chevy. Could you please tell me who among your advertisers makes the particular body type that I am looking for, or could you perhaps refer me to someone who could help me in locating this information?

Julia Ward Stein  
Ft. Meyers, FL

We're assuming that what you are calling a four-door Bucket T is actually a Phaeton body. There are probably more, but Total Performance (203/265-5667), among all its fiberglass reproduction offerings, has '28-'32 Phaeton four-door bodies, plus almost all the components required to build a running car.

## Parts for Older Kits

I am in need of a suggestion or two. I have to find a replacement

hood for my front-engine '56 MG-TD built by Classic Motor Carriages.

Bill Bienish  
Newburgh, NY

I purchased a used '37-'38 Bugatti kit car that is VW powered. I need some parts for it, like rear fenders and some other small parts. I've been getting your magazine for over a year hoping to see a manufacturer for this car, but I haven't come across anything. Is there any company you can suggest that might have some parts? I would really appreciate your help.

Jay Dreese  
Glen Cove, NY

It's difficult to find parts for certain kits when the company no longer exists. Our best suggestion is to find a kit-car club in your area and network with the members. Often there is someone in the club who has the same car and would be willing to help with parts sources and information. You might also want to scan automotive classified ads in periodicals such as Hemmings Motor News, Kit Car Classifieds, and Kit Car Marketeer. You should also consider advertising your needs in those publications.

## DeLorean Rebody?

I'm a new *Kit Car* reader, but I've been caught hook, line, and sinker. I presently own an '89 Pontiac Firebird and have owned an '85 Fiero (I'm kicking myself for getting rid of it now), but I was wondering if there is a DeLorean reboby for either of these cars—or any car, for that matter.

Steve Fender  
San Diego, CA

We don't know of anyone building a DeLorean reboby kit at this time. One reason for producing replicas is that the originals are ridiculously expensive and out of reach for most of us. Replicas fulfill a dream by allowing us to drive something exotic for an affordable price. We browsed through Hemmings Motor News to see what DeLoreans are selling for, and, at \$10,000 to less than \$20,000, you might as well buy an original.

## Vetteran Wanted

I found an old issue of *Kit Car* from 1993, and I really enjoyed what was left of it. I haven't been able to locate your magazine again at the newsstand, so I'm writing you in the hope that you can help me.

I am trying to locate a quality kit car for the early Corvettes (pre-'62). My favorite is the '57 or '59 series. What are the laws for registering these cars?

I would really appreciate your assistance.

Joe Gannon  
Holbrook, NY

Just recently we were discussing the disappearance of most of the older-Corvette-replica builders. About the only ones around right now—and that could change quickly—is CC Industries (616/426-3342), which is building a very authentic '57 model that will fit on either a custom tube chassis or a vintage



Corvette platform. We also just recently learned about LA Fiberglass' (504/845-9893) '56/'57 Vette replica, which is designed for a tubular chassis. You'll need to check with the DMV in your state to determine how to register such a vehicle, but it will probably be a case of registering it as a kit car or specially constructed vehicle. If you use a vintage chassis, you might even be able to get it registered as a reboby using the original VIN number—if it still exists.

## Lop'm, Top'm

Ragtop fever got you down? Don't have the bucks for one of those fancy cabriolet conversions for popular tin-top sportsters? I just found one fellow's answer to the lift-off hardtop blues. He said it is from Lop'm, Top'm Motorwerks. For only \$49.95, the company will send you its genuine simulated metal rollbar/sunroof support bracket and wood-grain



Targa top designed to fit anything on four wheels. For an extra \$19, you will also get the installation kit, which consists of a hacksaw, chisel, hammer, sheetmetal screws, and duct tape. The model I saw shows a typical installation, as well as the company's prototype BarkAlert Security System.

Let me know if you want to do a complete, step-by-step installation story. The company is willing and promises to disarm the security system for me.

Harold Pace  
Kit Carhive Columnist &  
Automotive Archaeologist  
Irving, TX

We think we'll stick to the more mainstream conversion specialists for now. It's obvious that Lop'm, Top'm is still in a research-and-development stage with its products and is

even preparing this car for some sort of reboby treatment as well. Thanks for the, er, spy photo, Harold, and be sure to keep in contact with the company to cover future developments.

however, speak volumes about credibility and quality. You should ask for a list of customers as a reference and contact them to determine if they were satisfied in dealing with

## Autospeed

I read your January issue and am interested in the Autospeed Porsche 356 Speedster you covered in "Cross-Country Cruiser." I am contacting Autospeed, but, of course, the company's information will probably be quite biased. Do you have any information about Autospeed's credibility, reliability, quality? After all, the company was in your magazine. Anything at all would be helpful.

J.E. Weeks  
San Marcos, TX

We have driven and photographed quite a few Autospeed Porsche replicas over the years and were impressed each time with the work coming out of that shop. Since we haven't built an Autospeed kit or purchased anything there, we can't speak to your questions about the company's reliability. The cars we've seen,

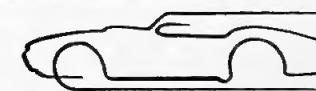


Autospeed. If you were to ask Susan Kass, who owns the Speedster we featured in January, we predict her response would be very positive about her nicely built car.

Letters in *Kit Car* reflect the opinions of the writers and do not imply the endorsement of this magazine. All letters should be addressed to Mailbox, *Kit Car*, 6420 Wilshire Blvd., Los Angeles, CA 90048-5515. Letters should include the writer's name, address, and telephone number. We reserve the right to edit letters for clarity, brevity, or other editorial purposes. Due to the volume of mail received, we cannot answer letters privately.

# Dayan

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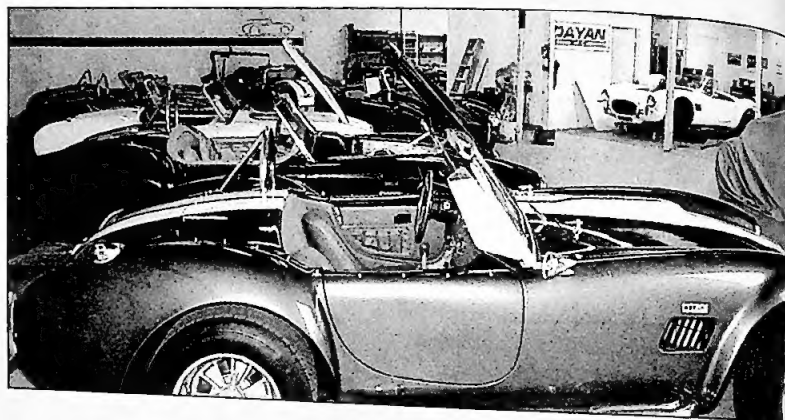
# SPECIALTY SCENE

## House of Cobras

Dayan House of Cobras is one of those clever entrepreneur businesses that causes you to slap your forehead and proclaim, "Why didn't I think of that?" It's a cool enterprise started by a pair of likeable guys—Dave Radtke and B.J. Andrews—who play off one another as they relate their obvious success story to anyone and everyone who crosses the neat threshold of their Orange, California, offices and shop. This is definitely Cobra country, with no fewer than 10 snakes (during our visit) taking up residence in the transforming showroom. Of those cars, seven wore Sold signs, awaiting pickup or delivery.

Dayan is a unique Cobra brokerage business that fills a very nice niche in the kit-car marketplace. They serve both buyers and sellers and at the same time showcase great examples of various Cobra-replica manufacturers' cars. And that's just one aspect of the business.

Based on their years of combined experience, Dave and B.J. will also help a prospective kit buyer/home-builder choose and purchase a kit. Dayan has a comfortable seating area in the office where customers can peruse sales literature from more than 15 manufacturers. In the case of a kit builder wanting to see how some



components go together, Dayan probably has a finished model of that car on the showroom floor.

The inventory of Cobra replicas turns over rather quickly, but fortunately Dayan has a list of cars waiting to come to the House of Cobras, plus an exclusive listing of cars for sale from around the country, complete with photographs and comprehensive biographies of the vehicles. Cars in stock can range from consignment Cobras and freshly minted models to Dayan purchases and builder consignments. It's an excellent way to compare manufacturers, build levels, engine choices, quality levels, and price, all in one location. Dayan's inventory during our tour of the facility included a Contemporary, two Classic Roadsters, two Stallions, several LA Exotics, a Superformance, and an ERA, among others.

Dayan also has a complete service shop and will fix or improve questionable components before a car leaves the facility to a new owner. Each car is thoroughly checked out

when it arrives, particularly concerning safety items. The company even has the capability to assemble kits on-site. Dayan takes a lot of the hassle out of buying a Cobra replica by not only having finished models on display, but also by offering the complete services of insurance, financing, and licensing so that a new owner can just drive away after the purchase.

Dayan House of Cobras is certainly a long-overdue enterprise that we sure wish we had thought of. Dayan House of Cobras, Dept. KC, 154 Cypress, Orange, CA 92666, 714/639-8088.



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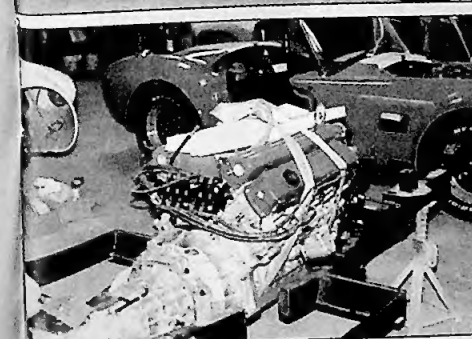
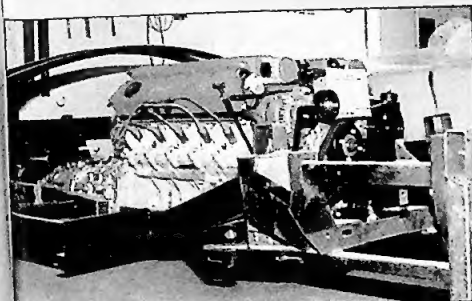
## Snake in a Snake

Can a viper coexist with a cobra? We just learned about a very interesting power project that we couldn't keep under wraps any longer. Living up to its subhead, "Yesterday's Classics—Today's Technology," Classics by Elite (614/852-5280) is putting together a very unique Classic Roadsters Cobra that it hopes will be the first streetable, wheel-standing snake in existence.

What will make this Cobra stand up and shout is its unique motive power. How about a Viper GTS V-10 occupying the engine bay? At least 450 hp and 490 lbs-ft of torque should do nicely to propel the lightweight car into stratospheric speed zones. Classics had to modify the frame a little to accommodate the big beast, but not as much as the company had at first imagined.

The project car will also have a Viper six-speed transmission, Wilwood disc brakes at all four corners, custom tubular control arms by Tom Beroth, a Pro-Chassis Engineering Ford 9-inch rear with a 4.76:1 axle ratio, and rack-and-pinion steering. The dilemma facing Classics by Elite now is figuring out the header situation since there have to be five pipes coming out of each cylinder bank. The car will be 50-state smog legal as well.

Stay tuned—we'll bring you more details as this snake-in-a-snake goes together.



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## The Legend Continues

This is definitely not your father's Oldsmobile. As Shelby American celebrates its 35th anniversary and Oldsmobile its 100th, the Shelby Series I performance roadster takes a bow. The car will be marketed through a select group of Olds dealers and will have a limited production of fewer than 500 cars. The car will be powered by a specially modified Aurora V-8 in a rear-wheel-drive configuration, developing much more than the stock 250 hp achieved in the Olds Aurora sedan. The body of the new car will feature carbon-fiber composites and super-light components to achieve a targeted total car weight of 2,300 pounds. A semi-monocoque chassis has been computer designed with a fully independent suspension that features an innovative rocker-arm configuration and

10 KIT CAR



# KIT CARCHIVES

By Harold Pace

## Lotusland

We Americans have had our share of great kit builders, like Devin, Glasspar, Fiberfab, and others. However, in jolly old England, there is also a kit tradition that encompasses some of the great designs in automobile history. Due to regulations that gave a sales-tax break to kit cars over assembled cars, many small-volume sports-car manufacturers offered their wares in either form. Some of the best known were TVR, Marcos, Ginetta, and Lotus.

Lotus is perhaps the most famous, due to its exploits in Formula One (Constructors' Cup in 1963, 1965, 1968, 1970, 1972, 1973, and 1978) and Indianapolis (winner in 1965). It also made a giant stack of other racing cars and a line of exciting street cars. As any former Lotus owner (like me) will tell you, the Lotus street cars were brilliantly designed and abysmally constructed, making the kit version a better deal, since you could at least make sure it was put together well.

### Seven Heaven

Everyone who has picked up a kit-car magazine is familiar with the Lotus Super 7 and the many clones that exist to this day, so I won't spend much time on them (check out *Kit Car*, Nov. '95). First introduced in 1957, it progressed through three updates while retaining a similar outward appearance. A redesigned and squared-off Series IV followed, but it was not a success. At that point, Lotus boss Colin Chapman sold the project to Caterham, which continues to build updated versions to this day.



A host of copies by Westfield, DAX, and others sprang up in England, as well as DSK, Centaur, and Rotus in the United States. The Mk IV was also replicated in the United States by North American Fiberglass, which called its version the Dolphin.

IT CAR

## For the Motoring Elite

Although many are aware of the Super 7 variations, little has been published about other Loti that have been replicated in the kit market. The first is the striking Lotus Elite,



PHOTOGRAPHY: HAROLD PACE

introduced in 1958. It was one of the most beautiful shapes ever crafted, matching even the Jaguar XKE for svelte aerodynamics. It used a 1,216cc Coventry Climax engine with a single overhead cam. This little aluminum motor, derived from a portable fire pump, weighed only 200 pounds and could be tuned to produce up to 105 hp in racing trim. With a dry weight of only 1,420 pounds, the Elite proved to be a stunner, capturing its class at Le Mans from 1959 to 1964, besting the top cars that Alfa Romeo, Porsche, and Abarth could throw against it.

The Elite proved to be expensive to build, so it was offered in kit form for about a third off the assembled price. It was trimmed, painted, and wired (what we now call a "pallet car") and could be assembled in about 25 hours. Since the curious British kit regulations forbade including instructions with the kit, a set of "dis-assembly" instructions was substituted that could be followed in reverse—which just goes to show that we Americans don't have an exclusive on idiotic bureaucracy. Elites were also offered in the United States in kit form. In a final effort to sell the last 30 or 40 body shells stored at the factory, one was built in 1968 with a Lotus Twincam engine, but it remained a one-off. Production wound down in 1963, although unfinished body/chassis units were still being sold off in the late '60s.

The Elite shape has resurfaced from time to time. In the late '60s, American kit giant Kellison started building replacement panels for the Elite and followed that with a complete body that it advertised would fit Triumph and other small sports-

car chassis. The company also encouraged owners to build their own chassis. This was not what we today would call a "kit," but it consisted of a body shell that you might be able to mate up with your chassis...or maybe not. Nonetheless, if one of these survived, it would be a rare (and beautiful) piece indeed.

In 1985, a Toronto-based company called GPJ showed a prototype of an Elite replica at the Canadian National Kit Car Show. Whether it made it into production is not known (anyone help me out on this?). As Lotus found out, the Elite is not an easy car to make money on. But what a body!

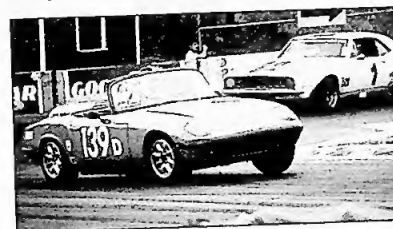
## A Certain Elan

The next Chapman project was the Elan, introduced in 1962. Featuring a 1,600cc double-overhead-cam conversion for the Ford Cortina engine (dubbed the Lotus Twincam) and a lightweight steel backbone chassis, it proved to be a potent combination for road and track and the absolute master of autocrossing. These "parking lot Ferraris" are still a force to be reckoned with in SCCA Solo II events. Weight for the fiberglass-bodied flyer was a paltry 1,500 pounds, and the suspension was fully independent. Many Elans were sold in kit form, and they were simple to build. In 1971, a "big valve" version of the TC engine gave a healthy 126 hp in stock form, and racers pumped it up to 180 hp. A generation of pubescent boys that grew up in the '60s will never forget the powder-blue example driven by the delectable Emma Peel on the popular English TV series, *The Avengers*.

When the Elan was phased out in 1974, a similar car was introduced by Vegantune, an English company that specialized in rebuilding and tuning Lotus engines. Called the Evante, it was only offered in turnkey form. The body lines were close, with a mild restyling of the nose and tail. The chassis was a tube frame, in place of the rust-prone Lotus sheet-steel frame. Although the company was bought by custom bus and van manufacturer Fleur de Lys in 1992, the Evante was still in production as late as 1993.

An American Elan copy was introduced in 1968 by race-car manufacturer Autodynamics in Marblehead, Massachusetts. Called the Hustler, it

looked almost identical to the Elan. This is because AD was making replacement panels and simply adapted them to fit a shortened VW



pan. It sold for about \$1,300 in kit form and could be fitted with VW, Porsche, or Corvair engines. Reportedly, AD spent much time making sure everything worked as it should, which means they were probably better cars than the majority of chop-chassis VW-based kits (the Meyers Manx SR excepted). Options included high-performance modifications developed from the AD line of racing cars. The Hustler was a practical, attractive car from one of Americas' most successful racing-car manufacturers.

## Racers Reborn

Lotus racers have been replicated as well. The '56-'58 Lotus 11s won hundreds of races all over the globe, including several class wins at Le Mans. Most used 1,100cc Coventry Climax engines. This great-looking car (styled by famed aerodynamicist Frank Costin) was replicated by Westfield in 1983 (the first kit offered by this very successful firm). The Westfield 11 used an MG Midget donor car for the engine, gearbox, and brakes. The chassis was a square-tube spaceframe, and the MG rear axle was located by a Panhard rod. The front suspension was a fabricated wishbone. The kit sold for \$4,600 in 1983, with turnkey cars in the \$10,000 range. It looked pretty accurate from the outside and was a fun toy. They are no longer in production, but plenty were sold in America and Europe, and used kits turn up on a regular basis.

Another Lotus racer that has been replicated is the 23. Built from 1962 to 1966, it usually ran a Lotus Twincam and a Hewland five-speed transaxle. Race weight was a phenomenal 880 pounds, so it goes without saying that the 23 was fast. Many great drivers did time in 23s, including F-1 Champ and Indy winner Jimmy Clark. This historic racer was replicated in England by Lee Noble, who built both race and street versions in the '80s. Noble, better known for his outstanding Ultima

and P-4 Ferrari replicas, widened the 23 and substituted modern drivetrain pieces. A Ford four-cylinder engine was normally used, with an Alfa transaxle and brakes. Now called the Auriga 23, it's imported by W.C. Motorsports in Frankfurt, Illinois. A more authentic replica of the 23 is built by Zanthos in England, which has faithfully replicated most components with only minor upgrades.

Both the Zanthos and the Noble have competed in an English racing series that features kit-car replicas.

## Europa! I've Got It!

The '66-'75 Europa was Lotus' first try at a midengine road car, and it was the first Lotus not offered in kit form when new. The early ones had Renault engines and gearboxes, which gave the lightweight sports car decent, but not breathtaking, performance. Later, the street Europa was treated to the Lotus



Twincam engine and picked up some punch. Laminar Concepts in Media, Pennsylvania, makes custom body kits and tuning parts for Europas, including spoilers, wings, and turbo kits. If you find a Europa that looks like no other, this may be what it is.

Since Lotus is still making exotic, beautiful, high-buck sports cars, we can hopefully look forward to a new crop of Lotus lookalikes blossoming in the future.

## Help!

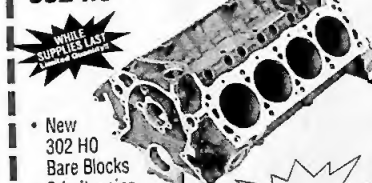
We're looking for owners of the following kits for future features/columns: Glasspar, Woodill Wildfire, Kurtis, Fiberfab Centurion, Rockefeller, Maverick, Kellison Panther or Astra, Amante GT, Vopard G-12 Lytning, MI specials, or anything else old and unusual. We'd prefer completed cars, but anything will be considered.

Help! I need historic kits to write about so the editor won't cancel my column. Send photos and descriptions of kit cars you can't identify or would like to know more about to: Kit Carchives, *Kit Car*, 6420 Wilshire Blvd., Los Angeles, CA 90048-5515. Sorry, but we cannot guarantee that all material will be returned.



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# Snake STALKERS

With all of the pseudo-Cobras on the kit market, members of the Bow Tie brigade probably get pretty tired of snake worshippers. But D&D Corvette has the antidote for snake bites. This company offers both coupe and roadster replicas of the Corvette Grand Sports. Both models set out to boldly go where no Grand Sport has gone before, at least as far as paint jobs are concerned. They're not exactly shrinking violets, but then neither were the originals.

For those who have been hiding

## Zora May Be Gone, but His Legacy Lives On

under a rock (or missed the Nov. '94 issue), the real Corvette Grand Sports were a series of five (John Mecom claims there was a sixth competition Corvettes built in 1963 by Chevrolet. They were very light (less than 2,400 pounds), suitably overpowered, and, with their unpre-

dictable handling and front-end lift, capable of scaring the pants off anyone who drove them. Now much valued as collector cars and vintage racers, the fab five originals command seven-figure prices. Those with more limited funds should consider D&D's faithful reproductions.

The dark-red GS roadster shown here is owned by Hobe and Nancy Nestor. Two of the original Grand Sports were sold by Chevrolet to Roger Penske as roadsters with built-in rollbars and cut-down windcreens. The Nestors' car looks a lot like the real thing, except for the neat detailing and the flawless paint



PHOTOGRAPHY: HAROLD PACE

(low priorities on prototype race cars). The Nestors drive their GS to car shows and swap meets, so outrageous performance takes a back seat to dependability. A Chevrolet ZZ3 crate motor was used, producing 345 hp from 350 ci. Port injection from a '92 Corvette teamed with Hedman headers and stainless steel sidepipes squirts the petrol. The tranny is a Turbo 350 automatic. D&D uses 4-inch round tubes to make a simple ladder frame with modified late-model Corvette suspension spring by Aldan coilover shocks. The frame design is similar to that of the original GS, but the late-model suspension works better than the original stuff. The steering column is by accident with an Appleton steering rack mounting a Grant GT wheel.

A car this special needs serious rubber, and BF Goodrich TA 50Hs do the trick with P245/50R15s in

front and P305/50R15s in back. The wheels are KMC chrome and aluminum units. The interior is special, too, with Eagle Talon seats modified and re-covered with medium gray leather. The gauges are Pro Comp units by Auto Meter. A padded armrest/glovebox resides between the seats. All this makes this beauty a standout at car shows and rod runs, where it never fails to attract attention.

The other GS clone is a seriously yellow coupe owned by Ted Brine of Westford, Pennsylvania. His car is made for a very different purpose than the Nestors' car. An ex-drag racer, Brine wanted a road rocket par excellence. Although it's also built on a D&D chassis and body kit, Brine's vehicle uses a mega-motor for maximum overkill. A 540-inch Chevy packs the punch with a Callies forged crank, crank, Camillo rods,

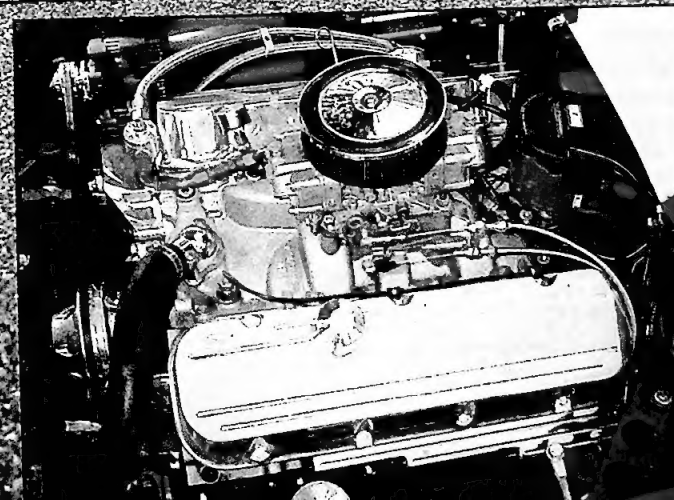
and 10.5:1 JE pistons. A Ted Herbert CB6H roller cam punches the valves in Dart 360 aluminum heads that were massaged by Sam Gianino, who also balanced the internals. This monster is fed by an 850 Holley reworked to flow about 950 cfm. It breathes through an Edelbrock Victor Jr. manifold. D&D provided the powdercoated sidepipes. Although the car hasn't been on a dyno, Brine estimates 750 to 800 hp.

The plumbing gets its share of attention with a Griffin aluminum radiator (with dual electric fans) for water and Earls' coolers for the oil and the differential fluid. Dual remote oil filters return clean lubricant to a Chevy LS7 oil pan. Gasoline (Sunoco Ultra 94) is safely stored in a 17-gallon Fuel Safe fuel cell.

To put this power to the ground, Brine uses a Richmond five-speed box with a Long shifter. A D&D tube



PHOTOGRAPHY: DAVID FETHERSTON

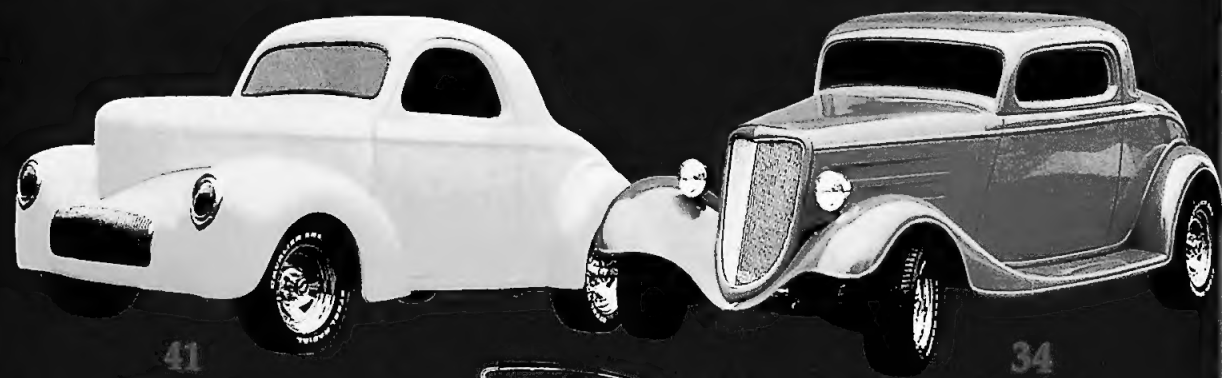




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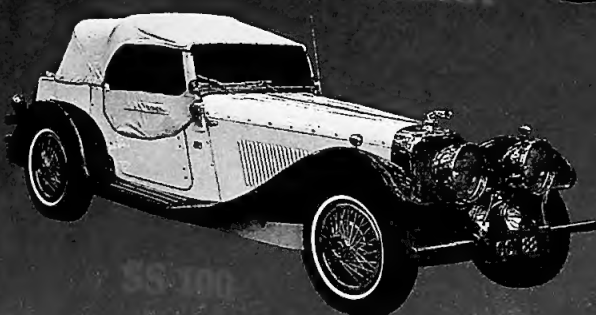


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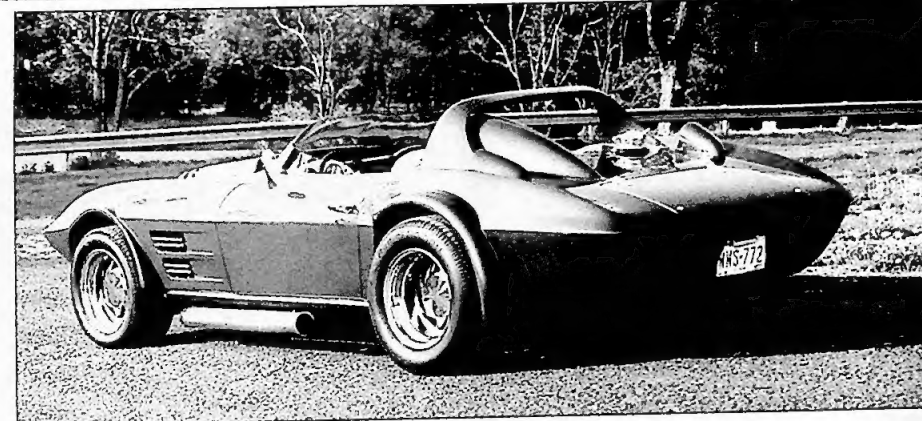
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### SNAKE STALKERS



chassis mounts a '90 Corvette suspension and a 3.33:1 final drive. The wheels are PS Engineering Grand Sport replicas (8 and 10 inches) with a pin drive and knock-offs. Hoosier supplies the rubber with 245/60R15 fronts and 275/60R15 rears. D&D sway bars control the roll, and Aldan coilover shocks control rebound. Steel axles and halfshafts are required to handle the power.

To steer this 2,600-pound brute, Brine uses a power rack-and-pinion system with an ididit steering column and a Grant steering wheel. Other interior items include D&D GS replica door panels and seats trimmed in charcoal vinyl with cloth inserts. The gauges are Auto Meter Pro Comp units. Both seats are fitted with five-point racing harnesses, and a D&D rollbar adds head protection.

Not wishing to hide his candle under a plain-Jane exterior, Brine had his GS replica fitted with the ultra-aggressive Daytona hood with side and frontal louvers (the Nassau hood has two forward-facing scoops). D&D applied the paint, which is, ironically, '95 Ford Mustang Yellow with an '85 Corvette Admiral Blue stripe.

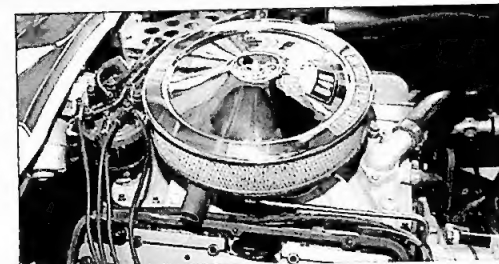
Unlike some GS replicas, this

the time—but not necessarily under the Chevy corporate banner. The ill-fated Corvette SS, which Duntov engineered in 1956, was crushed by a corporate ban on racing in 1957. However, Duntov carried on, building Chevrolet's high-performance

secretly pressed ahead to create the meanest and most powerful Grand Sport to forever stamp its image into the history of American sports-car racing, when it confirmed its potential as competitor to Cobra the following year.

It is these little slices of history that make cars like the Grand Sport such a unique machine. The Grand Sport, strangely enough, did not do that well in its racing, but the cars went on racing into the mid-'60s in various forms, making their mark as brutal and good-looking race cars.

The Grand Sport was wild-looking and animalistic in nature but,



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chassis mounts a '90 Corvette suspension and a 3.33:1 final drive. The wheels are PS Engineering Grand Sport replicas (8 and 10 inches) with a pin drive and knock-offs. Hoosier supplies the rubber with 245/60R15 fronts and 275/60R15 rears. D&D sway bars control the roll, and Aldan coilover shocks control rebound. Steel axles and halfshafts are required to handle the power.

To steer this 2,600-pound brute, Brine uses a power rack-and-pinion system with an ididit steering column and a Grant steering wheel. Other interior items include D&D GS replica door panels and seats trimmed in charcoal vinyl with cloth inserts. The gauges are Auto Meter Pro Comp units. Both seats are fitted with five-point racing harnesses, and a D&D rollbar adds head protection.

Not wishing to hide his candle under a plain-Jane exterior, Brine had his GS replica fitted with the ultra-aggressive Daytona hood with side and frontal louvers (the Nassau hood has two forward-facing scoops). D&D applied the paint, which is, ironically, '95 Ford Mustang Yellow with an '85 Corvette Admiral Blue stripe.

Unlike some GS replicas, this car was built from a '63 Corvette donor car (although very little of the original vehicle is left at this point), so it's titled as a '63 Corvette. That makes this one of the fastest '63 Corvettes anywhere, and it should perform almost on par with an original-condition Grand Sport. One thing's for sure, it's going to be difficult for any yellow Sting Ray to pick a race with a Cobra replica when news of this snake-pounder leaks out!—**Harold Pace**

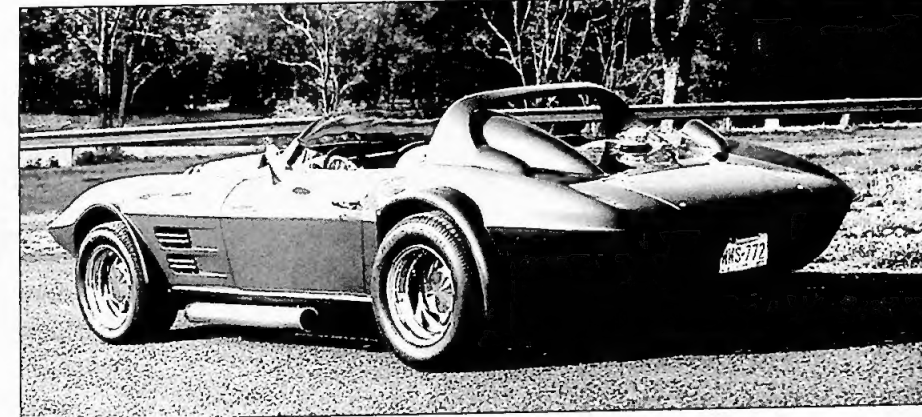
### Another Great Example

The history of American sports-car racing is as much a tale about European manufacturers showing the Americans a thing or two about racing as it is about GM playing off Ford in a covert operation on their own home turf.

The GM story revolves around a little orange V-8 engine affectionately referred to as "the small-block." It was this V-8 that Zora Arkus-Duntov made into the greatest high-performance production engine of all time in the Chevrolet Corvette.

In the '50s, Duntov's Chevrolet racing projects produced the most significant Chevrolet racing wins of

### SNAKE STALKERS



the time—but not necessarily under the Chevy corporate banner. The ill-fated Corvette SS, which Duntov engineered in 1956, was crushed by a corporate ban on racing in 1957. However, Duntov carried on, building Chevrolet's high-performance

secretly pressed ahead to create the meanest and most powerful Grand Sport to forever stamp its image into the history of American sports-car racing, when it confirmed its potential as competitor to Cobra the following year.

It is these little slices of history that make cars like the Grand Sport such a unique machine. The Grand Sport, strangely enough, did not do that well in its racing, but the cars went on racing into the mid-'60s in various forms, making their mark as brutal and good-looking race cars.

The Grand Sport was wild-looking and animalistic in nature but, in its final form, was a brutally fast machine that offered a power-to-weight ratio of 1 hp for every 4 pounds of body weight. Compare this to the '95 ZR-1 Corvette, which carried 8.3

pounds for every 1 hp.

Leon and Karen Panella have been Chevy-horsepower fans for years. Their stable of horses includes or has included 396- and 454-equipped Chevilles, a Cosworth Vega, and a Chevy II SS.

The Panellas wanted something unique—Chevrolet-based, of course—and they wanted a project they could build. They researched the market and decided there was only one choice, a Grand Sport Corvette. They purchased a complete kit from D&D Corvette in Akron, Ohio, for \$13,000 and set to work. With the help of Beans Custom Rods and J.P.L. Specialty in Aliquippa, Pennsylvania, they finished the Grand Sport in just nine months.

The kit arrived with a frame, body, window glass, grille, and lights. The frame and suspension immediately went out to Multi-Media Stripping in Pulaski, Pennsylvania, for stripping and powdercoating. The 4-inch round-tube frame made of mild steel was set up to use a '92 Corvette sus-

reputation in an undercover skunkworks.

The new '63 Corvette Sting Ray was about to be released in late 1962, and Duntov worked to create a racing version called the Grand Sport that could be handed off to privateers to do the actual racing. But there were other skunkworks tinkering around the clock, too. Carroll Shelby was working up his wild brew at Dean Moon's Santa Fe Springs workshop in California, building his first Cobra.

Sebring was to be the testing ground, but in October 1962 the first clash of the titans took place at Riverside Raceway. Both the Cobra and the Sting Ray raced in the "XP" class for experimental production vehicles that had not yet reached minimum production requirements. Even though Mickey Thompson's Corvette with Doug Hooper at the wheel won the event, the Cobra hammered hard all the way. Duntov could see the writing on the wall. He and his crew returned to Detroit and



## SNAKE STALKERS

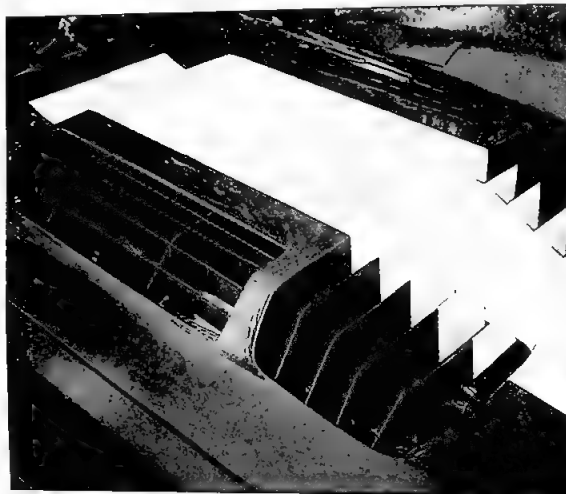
pension front and rear.

The stock transverse springs have been removed and replaced with Aldan America coilover shock assemblies, which allow the ride height and ride quality to be adjusted easily. This installation also uses the excellent variable-ratio '92 Corvette steering. The wheelwells are filled with 17-inch Halibrand replicas with ZR-rated Goodyear 255s in the front and 285s in the rear.

The hand-laid body was supplied in white gelcoat from D&D, and Leon did extensive preparation before he was satisfied that the glass was ready for paint. He selected '95 Chrysler PPG Candy Apple Red Chromabase for the body with a GM white for the stripe. The perfect paint was handled by Carmen Venezia in Wampum, Pennsylvania, and was done in three color coats with four layers of clearcoat to finish.

Leon chose a 502ci Chevrolet Tonawanda crate motor, which he sent on to McMillan Engineering in Chewton, Pennsylvania, to be balanced and blueprinted with an

Edelbrock RPM Performer cam and matching Edelbrock aluminum heads. Leon topped it out with an



Edelbrock Performer manifold and single Holley 850-cfm double-pumper four-barrel carburetor. Dyno numbers indicate a brutal 525 hp for the big-block. Dumping this wild load of horses out to the 3.36:1-geared rear wheels is a TCI-modified GM 700-R4 transmission.

The interior work was handed to Bob Freed Upholstery in Wampum, Pennsylvania, for trimming in black

vinyl over short-loop pile carpet. The wiring is from Ron Francis' Wire Works, and the instrumentation is all Auto Meter, with a matching speedo, tach, volt, fuel, and oil-pressure gauges. A LeCarra steering wheel completes the basic trim package.

The coupe weighs in at around 2,500 pounds, which means that with 525 hp on tap it has an amazing power-to-weight ratio of 1 hp for every 4.7 pounds of body weight. On the track, without pounding it too hard, the coupe has turned 12.50-second quarter-mile times at 117 mph, and its estimated top speed is 170 mph. Those are some hot numbers for a great-looking machine that's built to be bad.

—David Fetherston

### SOURCE

D&D Corvette  
Dept. KC  
1985 Manchester Rd.  
Akron, OH  
330/745-2544

### Zora—The Kit Connection

On April 21, 1996, the motorsports world lost a good friend. Zora Arkus-Duntov, the father of the Corvette, passed away at the age of 86. Everyone knows Zora's contributions to the street Corvette (fuel injection, the Duntov cam, and so forth), but we in the kit community have much more to remember him for. Zora's most famous projects have been replicated by the aftermarket community.

One of Zora's first commercial ventures was the production of the Ardun overhead-valve cylinder heads for the Ford flathead engine. These cylinder heads allowed the strangled Ford to breathe and made it a formidable racing contender. The engines found their way into many of the faster dragsters, road racers, and Bonneville cars of the early '50s.

One of the best-known customers for the Ardun heads was Allard, which equipped many of its J2 racing cars with Mercury flatheads. Zora was also an employee and a factory driver for the English company. He drove a J2R Cadillac in 1953 at Le Mans, where it retired. Allard J2X replicas have proved a popular favorite among kit builders.

Zora became involved with the Corvette program in 1954, but his influence was not felt until 1957. The improvements he oversaw resulted in the famed fuel-injected '57 Vette that chased the Mercedes 300SLs and Jaguar XK-140s right out of contention in SCCA racing. Many consider the clean '57 (and its slower lookalike, the '56) to be the pinnacle of Corvette styling. This is reflected in the popularity of the replicas, which the kit-car community has developed.

In 1963, the Corvette repeated its styling success with the



first Sting Ray. By 1965, this stunning car had received disc brakes, optional fuel injection, and its first big-block engine, the 425hp 396. The injected '65 is one of the most valuable Corvettes ever, and Sting Ray replicas are available on the kit market.

Which brings us to the Grand Sport. This car was a favorite project of Zora's and was intended to be sold in limited numbers to compete against the Cobras in GT racing. Zora's aim was to straight-out win Le Mans, where Ferraris with less than 400 hp dominated the prototype class. He planned to build a

377ci engine with Hemi heads that would crank out 550 hp at 6,400 rpm. In 1963, the powerful Cobra engines put out around 370 hp. The tube-frame GS weighed in at about 2,300 pounds, or about Cobra weight. If all went as planned, Zora figured a GS could outrun the Italians for an overall victory on the Sarthe circuit (and, in the process, absolutely decimate the Cobras). All this work had to be carried out in secrecy, since Chevrolet officially subscribed to the Automobile Manufacturers' Association ban on racing that had been in effect since 1957. Unfortunately, GM president Frederick Donner got wind of the testing sessions and cancelled the program (boo, hiss). As a result, the Cobra became a legend, and the Grand Sports were all but forgotten—until now, that is.

These cars are the lifework of a great man with a legendary team of engineers and designers. Most project leaders would be proud to have been responsible for just one car like these, much less the many that Zora's army brought to life. The kit industry has resurrected the Grand Sport. Zora has been vindicated—his work lives on for drive-way mechanics everywhere.

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Two Interpretations of the Fearsome Spyder

There have been numerous iterations of the Porsche 550 Spyder replica over the years, and, in fact, Porsche even had several versions of the original race car in its relatively short-lived career. It was also powered by several flat-four engine configurations, starting with a 1,200cc mill and eventually going to 1,500cc engines, mostly of the twin-cam Carrera variety. In the replica world, Spydys have been pushed by everything from Bug motors to six-cylinder Porsche 911s and even Mazda rotaries.

The 550 Spyder replica is one of the most enduring and popular kit-car designs going, possibly because of its sheer simplicity, humble lines, performance potential, timeless appeal, and personal size. Its interesting racing history is also an attraction—and what story would be complete without at least a



mention that charismatic actor James Dean competed in a 550 and lost his life in one?

We think you'll enjoy the two versions of the 550 Spyder presented here, if for no other reason than to appreciate new interpretations of the original. You will quickly see that the Vintage Spyder is a fairly authentic replica, while the Perry Design Spyder takes some liberties. The Vintage is a ground-pounding performance machine boasting 170 hp. The Perry version is designed to be a low-buck, quick-build kit that takes full advantage of a venerable platform and delivers some added room to the distinctive style.

## Vintage Spyder

Even though the original Porsche 550 used a 1,200cc racing engine, in the replica world just about anything goes. Of course, that staple of the kit industry, the Volkswagen Type 1 flat-four, has been the most common choice to fit under the sloping rear hatch. Output is usually less than 100 hp, but we've also seen 550 Spyder replicas fitted with everything from a

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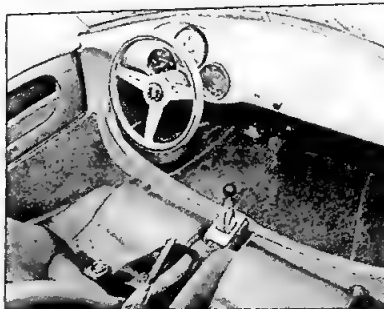


## ARACHNOPHOBIA

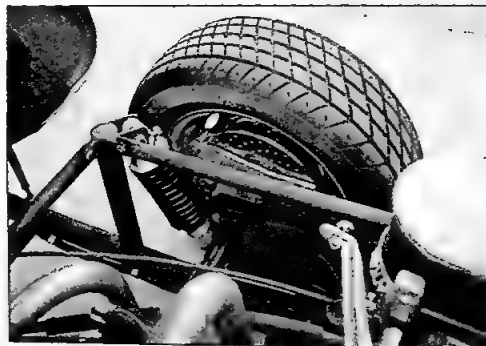
180hp Mazda rotary to a six-cylinder 911 Porsche mill good for around 300 hp (and, with nitrous, 430 hp). Yet another approach less seen offers more performance for not a lot more money and wrench time—the Porsche 914 engine. Perhaps it has been overlooked because the donor car was pretty lackluster due to detuning and an excess of poundage. But with some tweaking, this powerplant has a lot going for it, especially in a 550-style kit that weighs less than 1,400 pounds.

That's exactly what Rob Smith had in mind when he ordered a turnkey replica from Vintage Spyders. An engineer by profession, Rob saw the possibilities right away and asked Fat Performance of Orange, California, to add some special sauce to a '73 914 block. Fat's recipe started with 103mm JE forged pistons and a 78mm crank (bore/stroke of 103/78), producing a 7.8:1 compression ratio. To stir the air/fuel mixture, the fast-food chefs tossed in dual 44mm IDF Webers, whipped up the intake/exhaust valves to 38/48mm, and then turned up the heat with a set of S&S Sermatech-coated, 4-into-1 custom headers. After some balancing and blueprinting—and porting and polishing—this 2.6L really started cooking with more than 170 horses. To keep things from getting overdone, though, it required a T-4 Upright Fan Cooling Kit, a Fat Adapter 200mm flywheel, and some reinforcing in the Type 1 tranny, such as heavy-duty side plates and axles and a Super differential with 3.88:1 ring-and-pinion gears.

With a high-calorie dish like this, though, you've got to be able to stop, so the chrome-moly chassis was fitted with Neal disc brakes at all four



The Vintage Spyder has a more authentic cockpit, with its bulkhead and compact space.

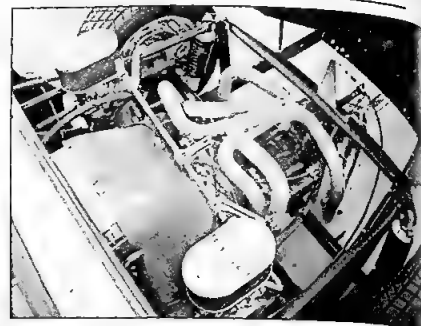


Vintage's midengine configuration features a custom trailing-arm suspension with adjustable coilover shocks. This car also has disc brakes at all four corners.

corners. Underpinnings also included Aldan coilovers in the rear and a VW torsion-bar front end, and the five-spoke Porsche-replica wheels were fitted with Yokohama AVS gumballs.

Of course, presentation is really important in order to make things appetizing, so Vintage Spyders went to extra lengths in the fit and finish. Coremat or steel plates in the lay-up reinforce all hinge points, and the body is baked (we're not punning here) prior to final block-sanding for straightness. The silver paint looks like a Porsche color but is actually a special mix from Custom by Santini in Westminster, California.

To keep this performance soufflé from falling, all fasteners are either high-tensile nylocks or heat-treated aluminum rivets. The round-tube chassis is made of chrome-moly and features



Rob Smith's Vintage 550 Spyder is powered by a built-up, 170hp Porsche 914 engine with 44mm Webers and custom headers.

additional reinforcements not found in other 550 replicas. Included in the reinforcements is a cowl hoop, which also locates and strengthens the steering column.

Greg Leach is the man in the kitchen at Vintage Spyders. Originally, this 550 Spyder replica was offered by ACI, which had developed the kit from molds done by Jack Kube of NAF. When ACI dissolved, Leach acquired the molds and reworked the chassis. He's stuck with the tried-and-true VW Type 1 components, which are durable, easy to source, and less expensive than the custom pieces formerly used by ACI. Vintage's base package costs \$9,500, and a rolling chassis goes for \$14,500. Turnkey cars start at \$17,900. It sounds like a blue-plate special to us, and with the kind of spicy sauce seen in Smith's car, we're up for a tasty delight.

### SOURCE

Vintage Spyders  
Dept. KC  
12112 Centralia Rd.  
Hawthorne Gardens, CA 90714  
310/865-6331

### Perry Spyder

Jeff Perry's idea was to develop a kit version of the Porsche 550 Spyder that would be relatively easy and inexpensive to build on a VW chassis. The original car was a midengine performer and quite small in stature, so naturally it was short on storage space, too. Why not use a longer platform with a rear-engine configuration, maintain the look and feel of the Spyder, and realize some reasonable room as a bonus? Keeping the VW pan at its full length would make the build easier, afford a more comfortable ride, and keep the expenses down. That was Perry's reasoning, and it

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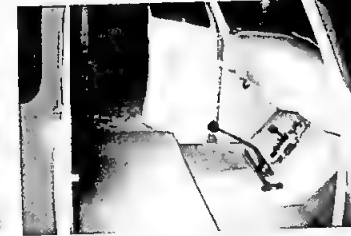
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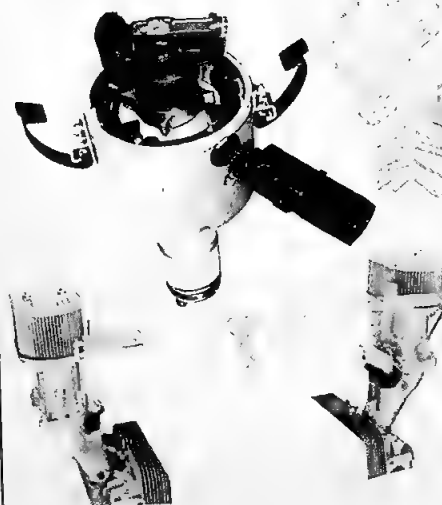
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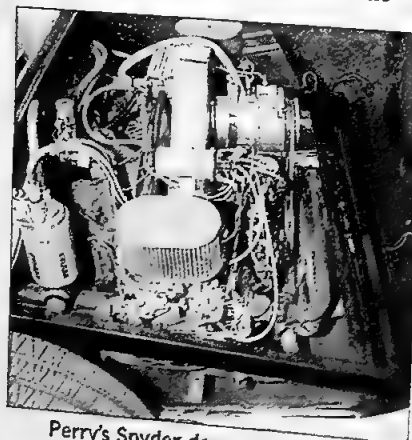


## ARACHNOPHOBIA

seemed small. The problem was that he couldn't just cut a 550 fiberglass body in half, stretch it to fit the longer wheelbase, and still make it look like a Spyder.

He spent two years working on the plug to get the lines of the car and its proportions to a point where the car looked right. Naturally, some compromises had to be made simply because of the longer chassis and rear engine, but the lines flow nicely and, from most angles, the car tricks you into believing it's the real thing. The front end is particularly authentic, and if you look at the stern from certain angles, it can appear beefier. However, the trade-off of gaining a whole lot more room turns this Spyder into an Interstate traveler with room for luggage instead of a mad dasher with room for little more than driving gloves.

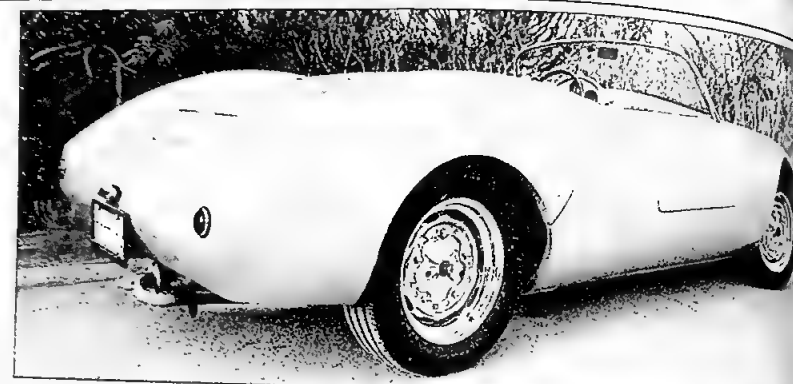
In trying to keep the build easy, Perry came up with a novel way of attaching his body to the VW chassis. The Perry Spyder employs an inner liner or tub that bolts to the



Perry's Spyder demonstrator is powered by a reworked VW flat-four measuring 1,835cc displacement and wearing a pair of Webers.

VW pan using the same mounting holes and bolts as the Bug body. This liner forms the interior of the car and is flanged to facilitate riveting the body on. Some fiberglass tabbing is necessary to additionally bond the liner to the body, but it is minor. Included in the liner is a molded space for the battery behind the passenger seat, as well as a package tray. The space behind the seats is actually huge, with room for luggage and a set of golf clubs. Included with the kit are front and rear steel subframes to support the front of the body and locate the hinged rear clip.

Perry sells the Spyder in several stages so that a builder can purchase as much or as little as he wants



based on his current budget.

The basic body package (\$3,650) includes the inner liner, body, rear clip, doors, hood, package tray, hinges, subframes, and builder's manual. An accessory package (\$1,700) provides the next phase of building the 550 and includes a custom polished-aluminum fuel cell, the windshield assembly, rear grilles, the wiring harness, light assemblies, a rearview mirror, the ignition switch, door latches, the hood latch, and miscellaneous hardware. A pair of vintage upholstered bucket seats on sliders, a carpet kit, trim upholstery, and brake and shift boots make up the interior package, which sells for \$925. Perry also offers custom wheels and tires and a host of optional items. Turnkey cars start at \$12,750.

A '66 VW Beetle chassis is the base for the demonstrator Perry Spyder, to which a Select-A-Drop front torsion axle beam has been added so that the front of the car can be adjusted to any desired ride height. Coilover shocks keep the 4.5x15-inch wheels on the ground. Perry retained the stock rear end, transaxle, and steering from the donor car and added KYB shocks to the rear. The vintage engine was rebuilt with an increased displacement (1,835 cc) and fitted



The vintage feel of the Perry 550 Spyder was retained, with a wood-rimmed wheel, VDO gauges, and traditional bucket seats. The difference is no bulkhead for lots of legroom,

with a dual Weber carburetor setup. The engine benefits from a custom oil-cooling system featuring two Hayden coolers, one of which is fitted with a thermostat-controlled electric fan.

The interior of the Spyder is spacious, with lots of legroom and elbow room in addition to the storage we've already mentioned. The vintage-style seats are mounted on sliding seat tracks, and, unlike the original car, there is no oval-opening bulkhead in front of the seats to contend with. The car sports classic-style VDO gauges from Brazil and a Moto-Lita wood-rimmed steering wheel. Like the original car, the doors are not airtight, but they are easy to open and close, with plenty of width for easy egress. Perry has already made several changes from the prototype car, including new door hinges that make operation even easier.

"Fun to drive" is an understatement, and the car draws plenty of admiring glances when it's out on the road. The dimensions and shape of the Perry Spyder are noticeable to the trained Porsche eye, but unless you have a more traditional-model replica alongside, most folks won't know the difference. **KC**

### SOURCE

Perry Designs  
Dept. KC  
1560 Commerce St., Unit H  
Corona, CA 91720  
909/279-6498

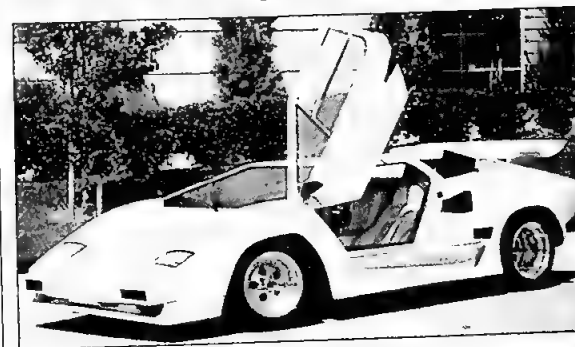
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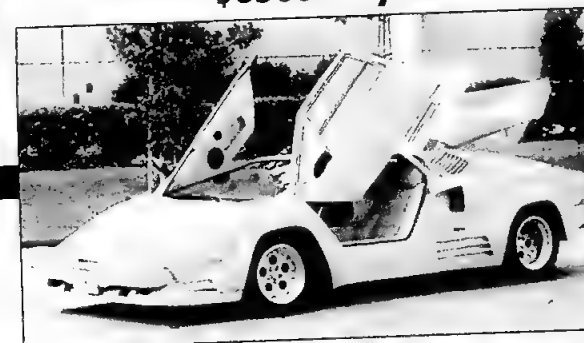


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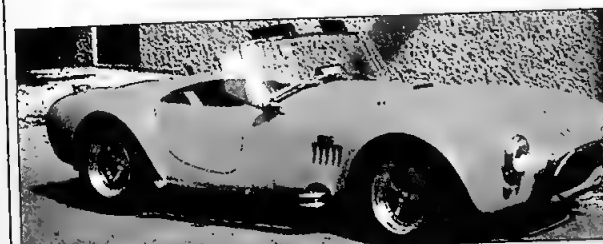
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You want a Cobra? Warlock Designs has it! Now the industry leader also carries the 427 Cobra!! Available in kit or pre-assembled fashion.

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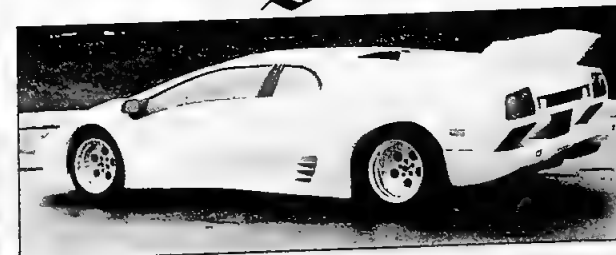
Includes complete showroom finish Cobra body package with doors, hood, trunk and hinges, chassis comes with motor, transmission and suspension mounts and is already equipped with Mustang II cross-member.

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This hand-crafted exotic has been in development for over 2 years. We have a body package which is made with the newest technological advances. Now Warlock Designs is offering a ONE-PIECE PAINT IMPREGNATED BODY in the color that YOU desire with an absolute perfect finish. This exotic is designed to mount LONGITUDINALLY in a specially designed chassis with a Corvette V-8 and 914 transmission for improved weight distribution. It also features the availability of A.B.S. 9.7" vented disc brakes and lowered coils to improve center of gravity. The basic kit comes complete with D.O.T. stamped glass, factory curved windshield, curved door glass, curved quarter glass, all hinges, weather stripping, shocks, all locks & latches, grills, electric mirrors, complete interior with door panels, new seats, all new VDO gauges plus instructions & video.

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# SHOWROOM SHINE

Paint & Body SPECIAL SECTION

By Teresa Lilly

Just as a quality paint job lies in the preparation, color-sanding and polishing the right way takes some time and finesse to achieve shiny results. If it's done thoroughly and in a systematic manner, the homebuilder can achieve results once limited to a handful of paint-and-body experts. Color-sanding and polishing bring out the best in a paint job, whether the paint is new or has aged a few years. Not only can minor scratches be rubbed out, but the surface is also smoothed over to a near-perfect gloss.

Throughout the procedure you must always be aware of paint thickness. This isn't so much of a problem if you have a new paint job, assuming you know that the painter applied enough paint. Even if you have a basecoat/clearcoat finish, you shouldn't take off too much clear, because the UV protection will diminish, and the base color will fade prematurely.

Also, timing is important with a new paint job. The paint needs time to cure. If you polish it too soon, it will tighten down, and you will have to buff the vehicle again, which could bring the paint down to a thin transparent film and possibly even expose the primer. With fresh lacquer, it is best to color-sand three days after painting and then let the car sit six weeks in approximately 70-degree temperatures before polishing. Polyurethane must be sanded no more than 48 hours after painting and then polished two months later. Acrylic enamel with urethane hardener is much the same as polyurethane.

As a rule of thumb, start with 1,000-grit sandpaper and just break the paint down to where the orange peel is gone. You can then lightly hand-sand the painted surface with 1,200-grit paper again just before buffing.

If you are polishing a car that has an aging coat of paint, clean the body thoroughly. Use a good wax and grease remover and go over all surfaces completely. Working one section at a time, use 1,200-grit paper on rough areas and 1,500-grit on areas that are small or places where you have no idea how thick the paint is.

It is important to sand the paint before the curing process and to even the surface. This also opens up the top surface seal, allowing the chemicals, such as thinner in lacquer and isocyanates in urethane, to escape at a faster rate than if you let the surface dry prior to sanding and polishing.

The accompanying photos show the step-by-step color-sanding and polishing process. Note that parts of the car have been masked off to keep the sections from becoming contaminated by the buffing sludge. The time it takes to mask off the body is brief in comparison to the length of time it would take to clean up all the buffing compound on your motor, interior, and chassis after polishing. **KC**

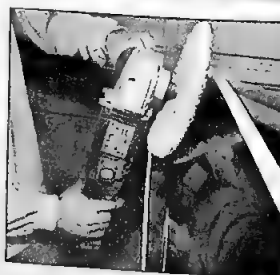
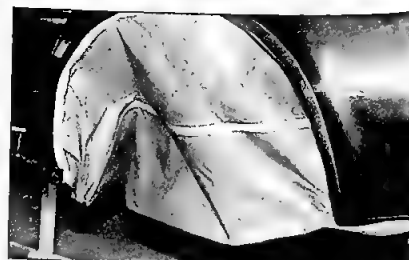


## Color-Sanding and Polishing Can Make Any Paint Job Look Great

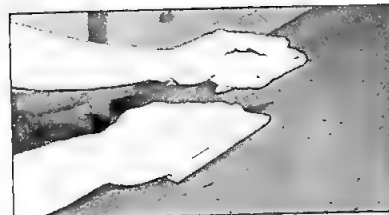
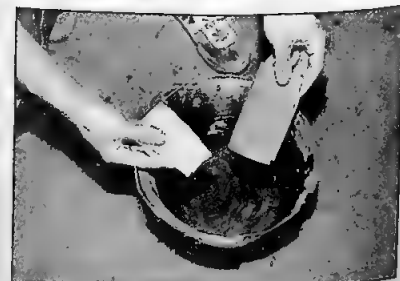


Carefully mask off areas that are not going to be sanded and polished. Here, the engine compartment has been masked from the fender edges inward.

The wheelwells should be masked so that the underside isn't contaminated.



You will also need a bucket of water, clean rags, and a flexible sanding block with 1,000-grit color sandpaper.



This is the proper technique for color-sanding. Hold the block flat and always have a damp, clean cloth nearby to keep the work area wet so that the paint will not build up on the paper. Check your paper every 20-30 strokes for buildup. When you see small traces of paint or clear sticking to the surface, turn to a new side or get a new sheet. Determine how many strokes it will take to remove any orange peel and try to use that same count on the rest of the body.

Don't use a block when sanding taillight edges and other tight spots. Maintain an even but gentle pressure with your hand or finger. Because of the highs, lows, and sharp edges of these areas, you could easily go through the paint here if you don't take care.



When working on the wheelwell edge, you must be careful not to hit the upper or lower edges. If you are very skilled, you may be able to use the sanding block in these areas. If not, then use one finger and paper.



Some areas of the car need to be polished by hand because a buffing wheel will burn through the edges. A new piece of cheesecloth with a small amount of polishing compound works best. Rub the compound into the rag before applying it to the body.

Here is the edge of the wheelwell being polished by hand. Four fingers together work well. Then take a clean polishing cloth and buff out the area to a high shine while removing any remnants of compound sludge.

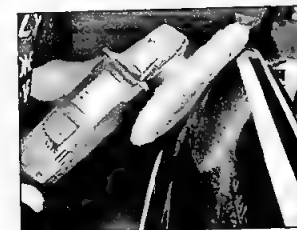


When you've accomplished the hand-polished areas and are ready to tackle the main body, tape up those edges you have compound-sanded and polished.

Apply a small amount of compound and, with a 3M Super Buff two-sided buffing pad, begin the polishing process. Move the buffer around initially to spread out the compound to avoid slinging it around and also to work it in more evenly.



The buffer is set at about 1,800 rpm, but it needs to be



slowed when working closer to edges. Buff the contour area of the panel. Although you hold the buffer flat to the panel, the buffing pad must be held up slightly to allow the buffer to work properly. Lift the edge in the direction you are buffing. Take it slow and easy and try to cover only about 1-square-foot areas at a time. Run the buffer for about 4 seconds per foot on lacquer and around 7 seconds per square foot on urethane. If you move it too quickly, you won't get an efficient cut. Move it too slowly, and you may burn the finish.

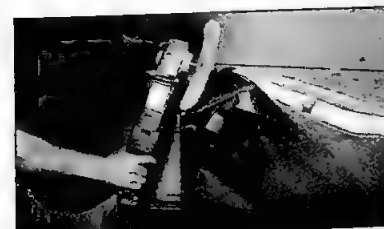
When all the buffing of the large areas is complete, wipe them down with a clean cloth, then stand back and sight down along the side of the panel. Mark any imperfections in the same direction that the imperfection goes.



Here is a fender with some imperfections. Mark them in the direction of the flutter, or orange peel. You must buff in the opposite direction to properly remove them.



Using 1,200-grit sandpaper, go against the grain on those areas you marked. Work just hard enough to remove the marks and only go about 30-40 strokes at a time between buffings. This also goes for cars that have already been polished and painted years ago. After you have completed all the sanding, you can remove the tape from all the edges on the body.



Use Finesse-It white polish or a similar product and a new two-sided polishing pad. Squirt on a small amount and work it into the pad. At 1,800 rpm, smooth out the compound. You can get close, but do not hit the edges. When you feel as if it is polished correctly, you should be able to see your reflection looking as it does in a mirror.

### SOURCE

Jeff Lilly Restoration  
Dept. KC  
11125 FM 1560  
San Antonio, TX 78254  
210/695-5151



paint  
& body  
SPECIAL  
SECTION



After our VW pan was taken to the sandblaster to remove years of rust, grease, grime, and adhesives, it was put in the oven to allow impurities to "sweat" from the metal. It was then cleaned and sanded, then coated on both sides with a zinc primer, which seals any remaining rust and keeps it from coming back.

PHOTOGRAPHY: CHRIS HEMER & JOHN KIEWICZ

# POWDER KEG

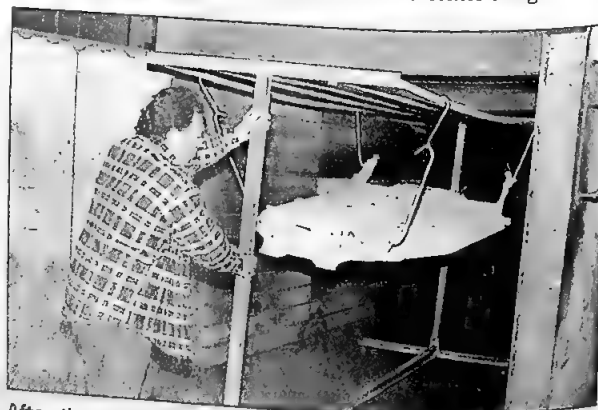
Powdercoating is Easier, Cheaper, and Better Than Paint

By Chris Hemer

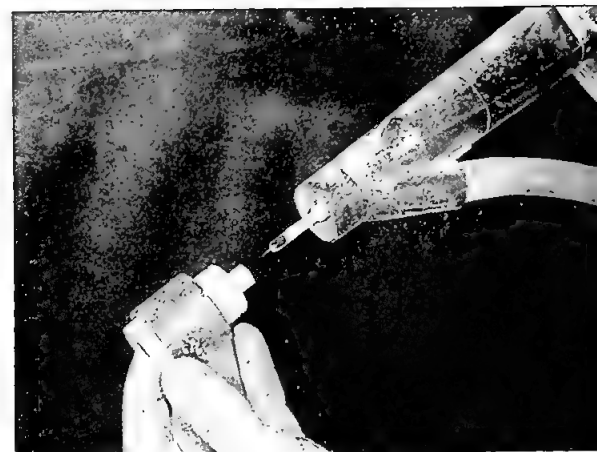
When customizing or upgrading our project cars, we usually think in terms of painting things and tend to rely on paint to spruce up items such as chassis, suspension components, engine parts, and so on. Painting is great, but some problems with it do exist. Although wet-applied paint is good-looking, for the most part it is not resistant to chipping, gasoline, and harsh environmental conditions. There is an alternative, however. Once thought of as rather exotic and expensive, powdercoating solves some of the inherent problems of painting metal parts and, in fact, can have a quicker turnaround time and cost less than traditional paint methods.

To get a better understanding of the powdercoating process, we recently visited Gold Coast Coatings in Camarillo, California, and talked with owner Sam Davis. Davis' practice is to first determine your goals and objectives for the parts you want powdercoated and then explain the options to best achieve those goals. Of course, our goal was to have a very detailed kit project with even the hidden components neatly and cleanly finished. We had stripped a VW pan down to the bare essentials in preparation for building up a driver HummBug that would have the potential of getting plenty of off-highway abuse. We settled on a satin-black finish

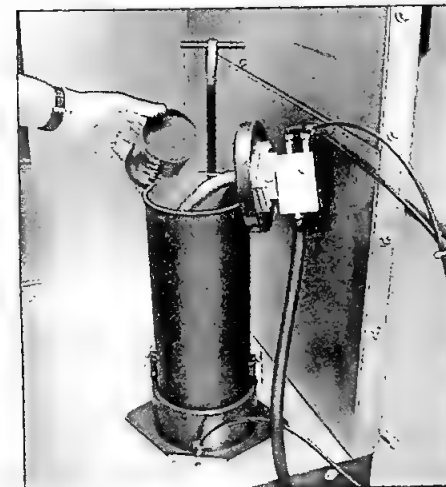
using epoxy powder, which Sam assured us is very tough and chip-resistant and impervious to gas, oil, brake fluid, and other paint-eating chemicals. The drawback to epoxy, however, is that it is not ultraviolet stable and doesn't hold up well when repeatedly exposed to sunlight. Simply put, powdercoating works like static cling.



After the primer coat, the piece is rolled back in the oven and allowed to "half cure." This way, when the color coat is applied, it will cross-link with the primer and bond to it instead of just sitting on top of the primer.



The powder is pneumatically fed to the nozzle, where an electrode charges the particles with a positive charge of between 25,000 to 65,000 volts but very low amperage. The part receiving the coating has a negative charge, causing the powder to adhere electrostatically.



Dry powder product is poured into the supply reservoir, where it is pneumatically fed, on demand, to the spray gun. If all of the powder is not used, it can be poured back into its original container and used at another time.



The finish coat of powder is applied—in this case, a satin-black epoxy powder. The epoxy was chosen for its great chip resistance and its imperviousness to oil, gas, brake fluids, and other harsh chemicals. The satin finish seemed ideal for a chassis since it looks good, is easy to clean, and won't magnify imperfections as a gloss finish would. The pan is then rolled back in the oven for its final cure.

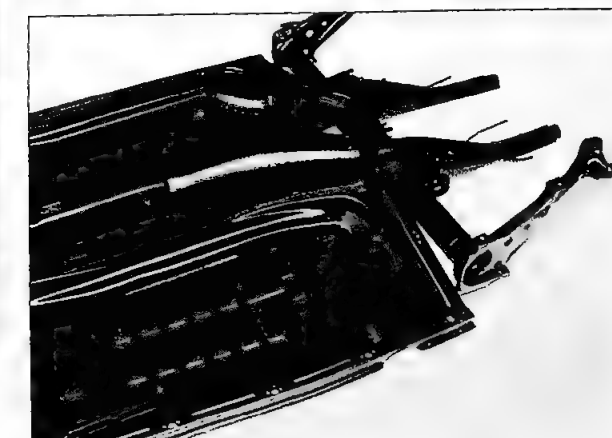
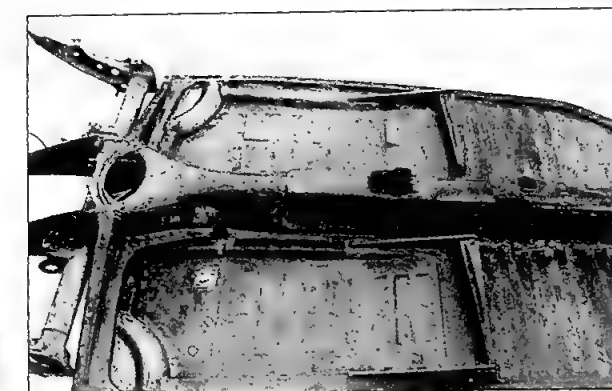
Powder within a pot is agitated by air, allowing it to be siphoned by a pickup tube and pumped up to the gun pneumatically. As the powder exits the gun, it passes by an electrode that positively charges the powder particles with between 25,000 and 65,000 volts but very low amperage. The part to be coated hangs on a rack or inside a booth that is grounded. As the powder floats from the gun in a wispy cloud, it is electrostatically drawn to the metal part and literally wraps itself around it.

The powder itself is made from uniform particles, typically made from either polyester, epoxy, urethane, or a hybrid (a mix of one or more powder types). Under the heat of the oven, the particles melt, or "flow out," creating a paint-like finish. Flow-out occurs in only a few minutes, but the part is left in the oven for a longer period of time to allow the metal to heat up, which is what cures the finish.

The only real disadvantage to powdercoating is that the colors can't be mixed. For example, you can't mix yellow and red to get orange—you'll just get red and yellow spots. There are, however, thousands of colors available, including candies and pearls, so if you want the powdercoating to match your paint job, choose the powder color first, then mix the paint to match it. The other disadvantage is you can't touch up a powdercoated part. It must be completely recoated. However, when you consider all the benefits, these are small shortcomings. **KC**

## SOURCE

Gold Coast Coatings  
Dept. KC  
19 Aviator, Unit A  
Camarillo, CA 93010  
805/987-9060



Before-and-after views of the platform show a marked difference. The powdercoated pieces are very durable and look factory fresh.



# SMOOTH STUFF

Products to Help You Achieve and Maintain a Hot-Looking Finish

paint & body  
SPECIAL SECTION



## Slick Stuff

How many times has your kit car been a little dusty but not dirty enough to drag out the hose and wash bucket? If you're looking for a quick wipedown between washings, try The Wax Shop's Slick Stuff. It's designed

to remove dust, dirt, light oil, and minor water spots from paint, glass, Plexiglass, and chrome. It was developed in conjunction with various NASCAR, IndyCar, and NHRA race teams to quickly eliminate dust and oily buildup without removing the wax protection. Slick Stuff sprays on and wipes off easily and leaves the surface in antistatic condition to help prevent further dust accumulation. For more information, contact The Wax Shop, Dept. KC, P.O. Box 10226, Bakersfield, CA 93389, 800/323-9192.



## Wrinkle Cream

You've prepped your fiberglass body for painting, but the surface still shows scratches and fiberglass strand

marks. What do you do? Try Compositite's Spray Max, a polyester primer and surfacer that the company claims has superior adhesion and flexibility and exceptional film-building characteristics to fill grind marks, deep scratches, pinholes, and other imperfections. Compositite says Spray Max is ideal for repairing rough bodywork and reconditioning fiberglass bodies. For more information, contact Compositite, Dept. KC, 5051 Snapfinger Woods Dr., Decatur, GA 30035, 707/322-8530.

32 KIT CAR



## Low-Density Filler

For filling gouges and cracks, it's hard to beat an epoxy filler with a

minimum of sanding. West System Brand 407 low-density filler creates easily sanded fairings and surfacing compounds. It cures to a rigid, lightweight material that has good load-bearing strength for its weight. Simply mix the filler with resin and hardener to fill any low areas, gouges, or nicks. After curing, it can be sanded to blend with the surrounding contour. Low-density filler is available in 4-ounce, 12-ounce, and 14-pound sizes. For more details, contact Gougeon Brothers Inc., Dept. KC, P.O. Box 908, Bay City, MI 48707, 517/684-7286.

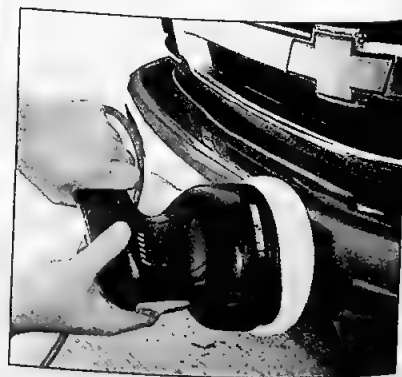


## Guide Coat

Eastwood's Guide Coat can help you find flaws on the surface of your car so small they cannot be seen or felt. The company claims that, after you spray a light coat on a primed surface and then sand, low areas will appear as dark spots, and high areas will be revealed in light spots. For more details, contact The Eastwood Co., Dept. KC, 580 Lancaster Ave., Box 296, Malvern, PA 19355, 800/345-1178.

## Detail Pack

Meguiar's Car Enthusiast Detailer Pack was assembled to make keeping the quality finish on your project car in top-notch condition. The kit includes Soft Wash Gel Car Wash, Body Scrub Paint Cleaner, Cleaner-Wax, and Quick Detailer. The Wash is the first step in getting the surface clean, followed by the Scrub for a little deeper cleaning. The Cleaner-Wax is formulated to create a gloss finish with lasting protection and has a nonabrasive formula to remove fine scratches and swirls. In between washings, the Quick Detailer is used to remove fresh contaminants and to maintain a just-waxed finish. The kit retails for \$19.95. For more information, contact Meguiar's, Dept. KC, 17991 Mitchell S., Irvine, CA 92714, 800/854-8073.



## Smooth Finish

Black & Decker's new palm-grip random-orbit polisher will be a welcome addition to any garage. This 6-inch polisher features a powerful .5-amp motor that generates 4,000 orbits per minute. Its light weight and balance help minimize vibration and user fatigue. For more information, contact Black & Decker, Dept. KC, P.O. Box 618, Hampstead, MD 21074, 800/54-HOW-TO.



## Touch-Up System

Thanks to the touch-up system from Dupli-Color, there's no reason to redo an entire high-buck, custom paint job just because of a small ding. The eight-step Dupli-Color system includes

scratch filler and primer, a clear topcoat, 2,000-grit ultrafinishing sandpaper, an ultrafine surface and prep tool, and step-by-step instructions. For more information, contact Dupli-Color Products Group/Diversified Brands, A Sherwin-Williams Co., Dept. KC, 31500 Solon Rd., Salem, OR 44139, 800/247-3270.



## The Wet Look

Any vehicle can have that wet look when finished with Eagle One Wet car polish or paste wax and maintain it with Wipe 'n' Shine and Car Wash. Each product is formulated with Teflon TE-3667, which enhances plating and durability to protect from hard-water spots and bird droppings. For more details, contact Eagle One, Dept. KC, 5927 Landau Ct., Carlsbad, CA 92008, 800/432-4531.

## No-Splash Nozzle

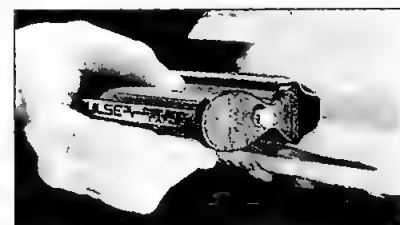
Since a lot of our kit cars are roadsters, care must be taken when washing or cleaning them.

This new No-Splash Nozzle takes the unwanted splash out of the stream by softening the water stream but not reducing its effectiveness. The unit is made of metallized zinc with a solid-brass valve and adjusting nut. The head of the sprayer is chrome-plated brass with a rubber protector. The No-Splash Nozzle sells for \$9.95. For more information, contact W.M. Shutok Co., Dept. KC, 38 Lexington Ave., Uniontown, PA 15401, 412/438-7390.



## Right-Angle Buffer

The home-builder now has a reasonably priced (\$39.95) right-angle buffer/polisher to achieve professional results. Sears has introduced the Craftsman 7-inch system, a well-balanced buffer powered by a .50-amp motor. It runs at 2,400 rpm and has a lock-on trigger feature for continuous use. The Right-Angle unit weighs 4.75 pounds and comes with a terry-cloth bonnet and a wax-applier bonnet. The buffer is available at Sears retail stores.



## Detail Sanding

Having trouble sanding those fine creases in your kit body? Style-Line's Pulse profile-sander is a lightweight hand-sander designed for repairing detailed feature and style lines. The device permits getting into the creases that would otherwise not get color-sanded. For more information, contact Style-Line Corp., Dept. KC, P.O. Box 5276, Athens, GA 30604, 706/354-6782.



## Details, Details

Attention to detail is what typically separates one custom car from another. Eastwood has a host of detail paints specially formulated not only to duplicate the brand-new look of many metal parts but to look new for a long time to come. Eastwood detail paints are available in three popular colors and in spray aerosols or quarts. Detail Gray is formulated with a stainless steel pigment for stamped or machined steel, rough-cast aluminum, pot metal, and die-cast components. Spray Gray is for cast-iron parts, and Aluma Blast is for smooth-cast aluminum parts. For additional information, contact The Eastwood Co., Dept. KC, 580 Lancaster Ave., Box 296, Malvern, PA 19355-0296, 800/345-1178.



## Aluminum Buffing

Wheels, engine accessories, and trim items can be transformed from a machined or brushed-satin finish to a mirror-like high luster by using a heavy-duty, three-step Aluminum Wash & Buff Kit from Busch Enterprises. The products can also be used on dull or tarnished previously polished surfaces to restore their shine. The kit consists of Aluminum Wash, Primary Buffing, and Finish Polish. The products are designed to be used in conjunction with a variable-speed drill fitted with the supplied drill arbor and a buffing and polishing wheel. The kit retails for \$24.95. For more information, contact Busch Enterprises Inc., Dept. KC, P.O. Box 7407, Charlotte, NC 28241, 704/588-2067.

## Whitecote

This product was designed for anyone who wants a powerful, super-tough coating in a brilliant white finish. Whitecote is ideal for chassis, undercarriages, or floorpans, where it cures to a rock-hard, non-porous finish that will not chip, crack, or peel when applied as directed. Restomative also offers POR-15, a rust-preventive coating that cures to an almost-ceramic finish that permanently seals out rust and moisture. The company has just introduced POR-15 solvent to be used as an aid in cleanup and also as a thinner when POR-15 is sprayed. When cured, no solvent can penetrate POR-15's finish. For more information, contact Restomative Laboratories, Dept. KC, P.O. Box 1235, Morristown, NJ 07962-1235, 800/457-6715. **KC**









## A Road Map for Getting Your Project Covered

By Corey Rudl

You have completed your dream car, and it is finally time to register and insure it. You're tremendously excited to finally hop into the car you have been sweating over for the last two years and actually drive it down the road—only to find out that your regular insurance company will not insure your new vehicle because it is a kit car. More often than not, your usual insurance company is ignorant of what a kit car really is and is not willing to break out of its tiny world of facts and figures, collision data, and the easy, more comfortable business of rewriting homeowner policies and collecting the premiums.

Well, all is not lost, however. There are some legitimate, heads-up companies that understand the special nature of component cars and their use and will write policies to cover our finished projects. Let us show you how to get your car insured, but, more importantly perhaps, how to do it for a reasonable cost.

Before you start calling around to some of the different types of insurance companies that we will mention later, you need to know what questions you will be asked and have that information ready and available.

1. **What is the appraised value of your car?** You must have your car appraised by a recognized vehicle appraiser in your area. Sometimes these appraisers are listed in the yellow pages, and other times you need to hunt for them at specialty-car dealerships. The appraiser will appraise your car for the current market value, not your construction cost. You may also need that appraisal for registering your vehicle, since license fees are often tied to the value of the car.

2. **Do you want a limited-mileage insurance plan?** You will find that many companies will offer you limited-mileage plans for your car, and some companies will insist on it. This generally brings down the cost of the insurance. It is a realistic way of insuring a specialty car, particularly when you consider that it really doesn't get driven much during the year. If you want unlimited-mileage insurance, be prepared to pay for it.

3. **What is your driving record?** Many people just guess at their number of driving infractions over the last few years. If your insurance company looks up your record—which it will—after you have bought your insurance, and it finds an extra few "moving violations" that you may have forgotten about, you can see your rates instantly jump by as much as 20-30 percent in some states, or you may be immediately cancelled.

4. **How is your car registered?** You must know how to present your car to the insurance company. Is it a Fiero rebodied and registered as a Fiero? Is it a Mustang donor car, registered as a Mustang because that was the donor engine or chassis used? Is it registered as a hand-built car, kit car, street rod, or so on? This can vary your rates with an insurance company. It's a good idea to go through the full registration process before you go shopping for insurance.

You may need an assigned VIN number, car classification, and so forth when it comes to insurance.

### Where Do I Find Insurance?

1. Contact a company that specializes in specialty-car insurance. Most of the specialty insurance companies take into account the value of your vehicle (as determined by an appraiser), the mileage you drive each year, and personal info such as your driving record, area of residence, and so on. Most of them require that the vehicle not be a daily driver and that it must adhere to set mileage restrictions every year. Generally, most of these companies will not insure drivers under the age of 25. This is to provide for less expensive insurance rates because older drivers are not subsidizing the higher rates of the younger drivers. The mileage plans vary depending on the company, but they usually have maximum-mileage

plans of 2,500, 5,000, and 7,500 miles per year. If you qualify for collector (specialty) car insurance, you will normally get a lower rate than insuring it through your usual agent. Also, the specialty insurance companies are generally more understanding in a claim situation. They understand that you have a unique car and may require special parts and special circumstances, and they have policies to accommodate you. For more companies, look in *Hemmings Motors News*; there are a handful that advertise there usually listed as "collector insurance."

2. Contact kit-car clubs in your area. They are an invaluable resource. There is a very good probability that someone with a car very similar to yours has already jumped through the hoops and untangled the red tape to get the best insurance deal. Find out where some of its members get insurance and how they registered their kit cars. Their advice is always valuable. To find out the nearest kit-car club to you, contact Tom Cogan of the AHA (Association of Handcrafted Automobiles) at 619/326-4677. It is a national club that will also be able to direct you to kit-car clubs in your area.

3. Also contact your local insurance agent, underwriter, or broker. Some mainstream insurance companies are getting the idea and are now beginning to insure some types of kit cars. They typically take into account many more factors, however, than the specialty companies. You must understand that standard insurance companies are leery of insuring your vehicle, mostly due to the "unknown" factor. The insurance companies are dealing with an unknown car. To them, this is a high risk. They do not have any robbery, accident, or safety statistics on which to base their judgment for insurance rates. It will be your job to help with their education about your car. Offer any statistics and information, including the car's specifications to assist them. Mainstream insurance companies base their rates not only on the value of the car, the mileage you drive, and your personal info, but also the physical attributes of the vehicle. For example, you will pay higher insurance premiums for a convertible or a two-door. Some insurance companies even have different class ratings based on size of engine (not horsepower rating) and body style. It is not uncommon for you to have a lower insurance rate with a 300hp modified 2.6L V-6 than with a 200hp 5.7L V-8.

### What Kinds of Coverage Can I Expect?

Coverage will generally be very similar to your daily driver. You will have options for liability, fire and theft, property damage, comprehensive, medical, and collision. However, note that the specialty-car insurance companies offer some advantages that you will not find anywhere else. They can literally customize some insurance plans to meet your specific needs.

A real nice benefit to some of these specialized insurance companies is the fact that they offer special collision plans that only cover you for parts damage and not labor. This plan is built under the assumption that since you built the car, you can also fix the car yourself—they just pay for the parts. The rates will usually reflect this idea with a premium reduction.

Secondly, some of these specialty-car insurance companies can also put uncommon coverage on the vehicle. For example, you could have an \$8,000 show-class paint job. They can put special coverage on this expensive option on your car. This is only one small example of how a specialty-car company can customize the insurance for your needs.

Although none of us relish the prospect of an accident or theft, it is a potential reality. It is very important that you keep detailed pictures of the car or even a videotape that captures every detail about the car in case you need it to prove its physical condition. Insurance is just one of those annoying but required aspects of our lives that we'd probably rather not deal with. Aside from the fact that more and more states are requiring that we have proof of insurance carried in the car, it's just prudent.

*Editor's note: Contributor Corey Rudl wrote Secrets of Buying and Building Your Specialty Car on a Small Budget, a guide to building a kit car for the lowest price possible. As a special to Kit Car readers, mention this story and receive a discounted price of \$19.95 (plus \$3 shipping and handling). Contact Money Savers Group, Dept. KC, 812 Proctor Ave., Ogdensburg, NY 13669, 800/255-1914. KC*

### SOURCES

**Condon & Skelly**  
Dept. KC  
121 E. Kings Hwy., Ste. 203  
Mapleshade, NJ 08052  
800/257-9496

**Heacock Insurance Group**  
Dept. KC  
222 E. Cemon, Ste. 101  
Lakeland, FL 33801  
800/678-5173

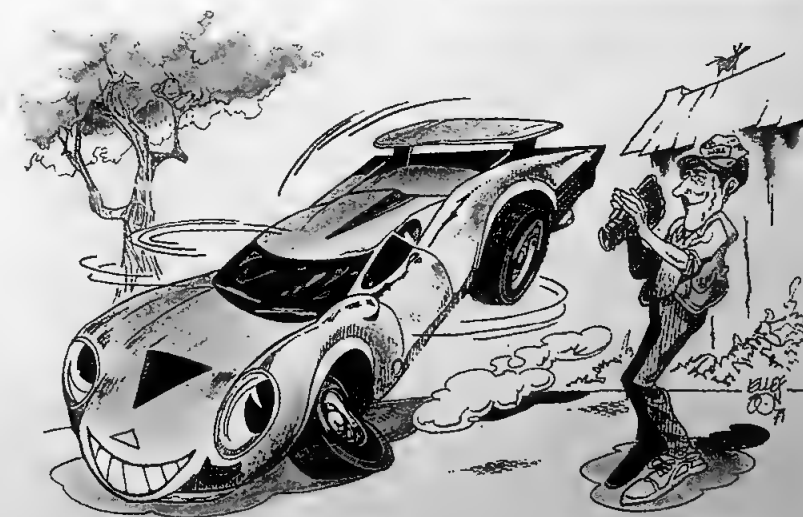
**Parish Insurance Co.**  
Dept. KC  
P.O. Box 158598  
Nashville, TN 37215  
800/274-1804

**Sneed, Robinson, Gerber, Inc.**  
Dept. KC  
6645 Stage Rd.  
Memphis, TN 38184  
901/372-4712

**Tri-State Insurance Co.**  
Dept. KC  
1 Roundwind Rd.  
Luverne, MN 56156



# HOW TO FIND KIT-CAR INSURANCE





# STOP & GLIDE

## A Buyer's Guide of Products to Improve Your Braking and Handling

By Lynn Marie

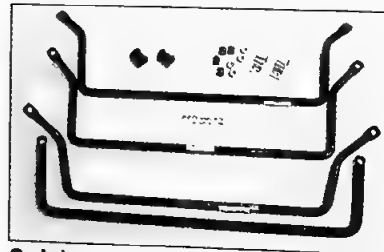
Speed—everybody loves it, but with all that go, go, go, you'd better be sure of your whoa, whoa, whoa—along with some extra control in those tight corners. To improve this type of performance in your project car, you need to pay attention to the oft-neglected and not particularly glamorous parts such as springs, shocks, antiroll bars, calipers, and rotors. So try bolting on some of these high-tech suspension systems and disc brakes and see if your handling doesn't markedly improve, your braking time drop, and your peace of mind about the safety of your speed buggy increase greatly. To assist you in making your car as safe as possible, we have compiled this buyer's guide, a plethora of suppliers for your brake and suspension needs.

### Serious Braking Power

Braking power is never more important than when racing. To get those powerful stops, disc brakes are a must, and that's why Wilwood Engineering is now offering a disc brake kit with the stopping ability of a pro racer. This disc-brake kit is designed for '65-'69 Mustangs, Cougars, and other Ford-based kit cars. Information: Wilwood Engineering, Dept. KC, 461 Calle San Pablo, Camarillo, CA 93012, 805/388-1188.

### Sure-Footed Cat

Accurate Machine Products' second-generation Jag-based rear suspension, the XK2000, features widened lower A-arms and spindle housings machined from aircraft-grade billet aluminum. Also included are Watts linkages and wheel hubs with pin drives mounted on original spindles. The outboard-mounted brakes are designed to provide superior stopping power and to reduce stress on halfshafts and joints during hard braking. Information: Accurate Machine Products, Dept. KC, 20417 Earl St., Torrance, CA 90503, 310/370-1035.

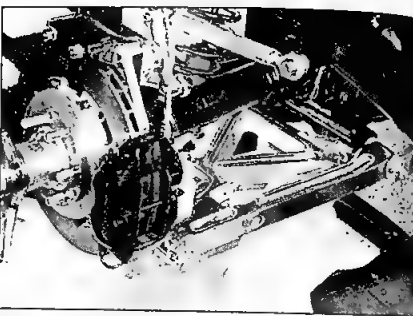


### Quicker Response

If your project car has a Mustang II front suspension, Quikcor Suspension has the antiroll bars you need. Installed with simple handtools, this design uses Grade 5 bolts and lock nuts, as well as zinc-plated mounting brackets and polyurethane bushings. Information: Quikcor Suspension, Dept. KC, P.O. Box 68011, Portland, OR 97268, 503/654-2175.

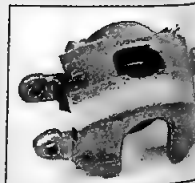
### Eibach Suspension Catalog

Eibach Springs, supplier of competition suspension components, has just released its '96-'97 Motorsports catalog with complete fitments for nearly every type of auto racing from NASCAR trucks to Formula One. Included are graphic examples of key suspension formulas, with vital main and tender spring information. Information: Eibach Springs, Dept. KC, 17817 Gillette Ave., Irvine, CA 92614, 714/752-6700.



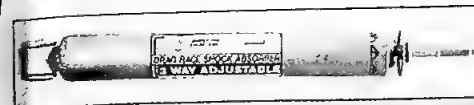
### PST!

Performance Suspension Technology's rebuilt caliper assemblies are said to eliminate dried or hardened seals, scored pistons and bores, and old clogged passages. Each assembly is covered by the company's 10-year limited warranty. For a free catalog, call or write and mention code S101. Information: Performance Suspension Technology, Dept. KC, P.O. Box 396, Montville, NJ 07045, 800/247-2288.



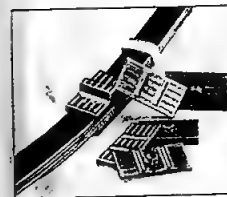
### Af-Ford-Able Support

RCC Specialty Products offers tubular control arms that are said to improve handling and suspension travel and eliminate deflection due to urethane bushings. In addition, RCC has developed a bolt-in three-link suspension system with coilovers to replace the Ford rear leaf-spring suspension system. This three-link suspension system is claimed to reduce weight and eliminate axle wrap on acceleration. Information: RCC Specialty Products, Dept. KC, 5609-F Parker-Henderson Rd., Ft. Worth, TX 76119, 817/536-3820.



### A Shocking Change

Competition Engineering is pleased to offer three-way adjustable racing shocks designed to allow you to dial in just the right amount weight transfer, with the front shocks easily adjusting to ratios of 10/90, 20/80, or 40/60 and the rears to 70/30, 60/40, or 50/50. Information: Competition Engineering, Dept. KC, P.O. Box 1470, Guilford, CT 06437-2116, 203/453-5200.



### All-American

Eaton Detroit Springs has a long history of supplying coil and leaf springs for American cars and trucks. The company can also supply urethane bushings and everything necessary for spring installation, including new urethane axle pads for the '62-'80 GM F- and X-bodies such as the Camaro, Firebird, Nova, and Pontiac Phoenix. Information: Eaton Detroit Springs, Dept. KC, 1555 Michigan Ave., Detroit, MI 48216, 313/963-3839.

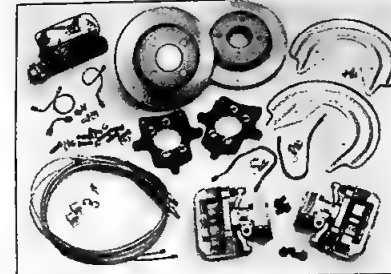
### Plant 'Em Deep

Chassis Engineering's new '96-'97 full-color catalog details such items as the company's street-legal trailclift bars. They are engineered to use axle torque to lift the chassis while exerting downforce to plant the tires securely and avoid rear wheelhop on hard launches. They simply bolt on, with no welding required. Information: Chassis Engineering, Dept. KC, 1500 Ave. R, Riviera Beach, FL 33403, 561/863-2188.



### Comfortable Control

Those who want both performance and a smooth ride should know about Pro-Motorsports Engineering, the manufacturer of progressive-rate springs. These springs are said to provide crisp handling, but not at the expense of a comfortable ride. Information: Pro-Motorsports Engineering, Dept. KC, 1672 E. 10770 S., Sandy, UT 84092, 801/571-6097.



### More Stopping Power

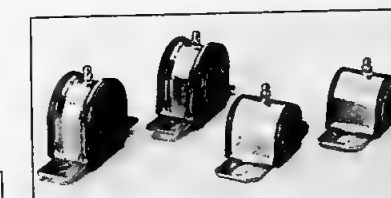
It's time to convert your kit's older Ford suspension to disc brakes for better stopping power. Standing ready to help you make this necessary change is Stainless Steel Brakes. Pictured here is the rear disc-brake conversion kit for '79-'93 Mustangs and Capris, but the company also offers a whole inventory of conversion kits for old and new Fords. Information: Stainless Steel Brakes, Dept. KC, 11470 Main Rd., Clarence, NY 14031, 800/448-7722.



### Shock Value

Imagine being able to adjust your shocks to change from competition to sport or touring

mode with just the resetting of an easy-to-reach external control knob. Although it's not the only adjustable shock on the market, Doetsch says the company's shock offers superior performance and ride quality. Shocks are available for most cars, trucks, and SUVs. Information: Doetsch Tech, Dept. KC, 340 Vernon Way, El Cajon, CA 92020, 619/593-1800.

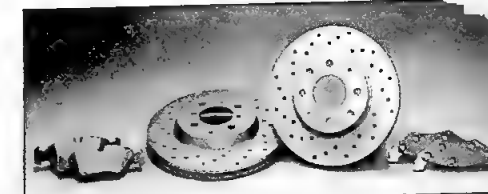
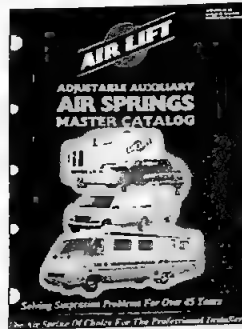


### Stop the Noise

Tired of that annoying antiroll-bar bushing noise? Energy Suspension could have the answer you're searching for with its new greasable universal antiroll-bar bushing set. These antiroll-bar bushings, complete with zerk fittings, have a design that allows grease to reach all inner bushing surfaces. Information: Energy Suspension, Dept. KC, 1131 Via Callejon, San Clemente, CA 92673, 714/361-3935.

### Need a Lift?

To improve ride quality and stabilize handling problems, Air Lift offers adjustable auxiliary air springs and supporting accessories, such as onboard compressors, low-pressure sensors, and installation and repair parts, plus several cab-commanded load and ride-control systems. Information: Air Lift Company, Dept. KC, P.O. Box 80167, Lansing, MI 48908-0167, 800/248-0892.



### Extreme Brakes

Autospecialty, has just released a new series of binders called Power Stop Extreme Performance Brakes. Due to redesigned rotors, the company says these brakes will provide superior braking performance, increase pad and rotor life, reduce rotor warping, provide faster stops with less fade, and vastly improve wet-weather braking. Information: Autospecialty, Dept. KC, 19801 S. Vermont Ave., Torrance, CA 90502-1127, 310/354-1320.

### You Can Tax This I.R.S.



Conco West Industries' new champ-style quick-change independent rear end features heavy-duty diamond-track positraction, a 10-inch ring gear and pinion, 31-spline chrome-moly stub axles, tubular drive axles, 1410-series U-joints, .810-inch-thick vented rotors with Wilwood calipers and emergency brakes, four coilover shocks, and a wide variety of gear-ratio choices. Information: Conco West Industries, Dept. KC, 644 Terminal Way, Costa Mesa, CA 92627, 714/642-9807.KC



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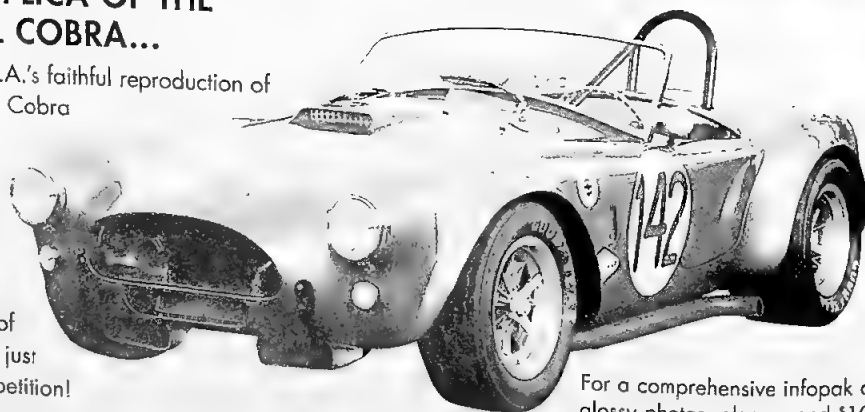
ul•ti•mate (ul'•tə•mīt) adj: most extreme: greatest

quin•tes•sen•tial (kwīn'•sen'•shəl) adj: being the purest or most characteristic.

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860-224-0253

# FUN ON THE RUN



By Jim Youngs

Santa Catalina Island, some 26 miles (as the song says) offshore from Los Angeles, has been a welcome retreat for Southern Californians since the days of Zane Grey and Ernest Hemingway pulling in huge tuna and swordfish from the surrounding waters and Glen Miller's big-band sounds emanating from the Pavilion located on the western spit of Avalon Harbor. The harbor was always abuzz with activities, from sea planes making regular trips to the mainland and the big white steamships bringing cheerful tourists to the island, to glass-bottom boat trips exploring the underwater gardens teeming with garibaldi and nighttime boat excursions to scare up the unique flying fish. Part of the novel character of Catalina was the fact that there were (and still are) very few cars—actually very few places to drive, anyway—



A Simple Design on  
an Unusual Donor, the  
Fun Car Just May Be  
Today's Beach Buggy

PHOTOGRAPHY: JIM YOUNGS

## FUN ON THE RUN

and certainly no motor vehicles on the oceanfront streets of the quaint town. Many of our fondest memories, however, came from an aging rental fleet of Mini Mokes. You couldn't drive too far, but blasting around in a tiny, doorless car with a canvas bikini top held some special interest, if for no other reason than the sheer fun of driving something unusual in a great setting.

One aim of The Fun Car Company with this, its first product, is to market the Fun Car down the road as a vacation vehicle or resort rental. The developers see one aspect of this car as a kind of Mini Moke or beach buggy for the next century. Ultimate plans for the car span international boundaries, but for the time being, the kit-car world will benefit the most.

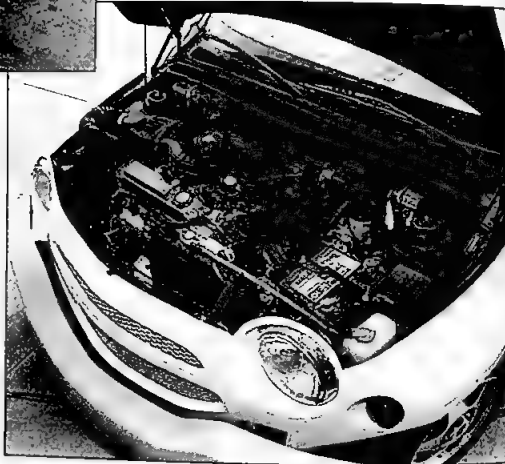
What you see here is the prototype and test-mule Fun Car, but very little visible change will occur with the production bodies and hardware.



The test car is neatly detailed and has a flawless white-gelcoat finish. Even the interior looks factory.

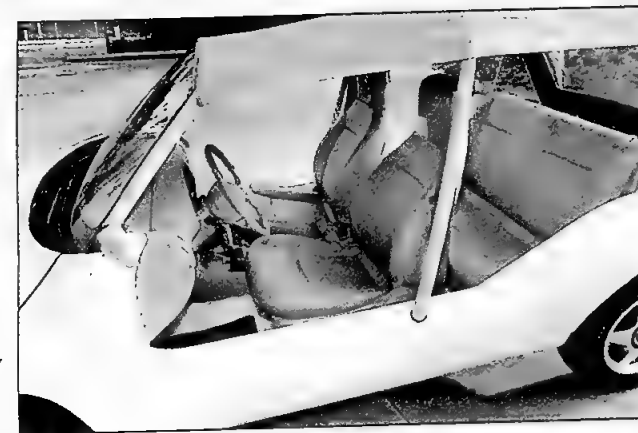
The Fun Car is designed to transform the underwhelming econobox Geo Metro and Suzuki Swift into a, dare we say it, cute, open-air resorter. It's actually a rebody requiring the donor body to be cut off down to the rocker panels and from firewall

to trunk. The stock engine and drivetrain remain intact, as do the dash, seating, and gas tank. Since these donor cars are unibody vehicles, the company utilizes steel side beams extending fore and aft, located just under the body sills, and a cross-member underneath to add back some integrity. These ubiquitous commuters actually make some sense as donors in that they have fuel-injected engines (either a 55hp 1.0L three-cylinder or a 70hp 1.3L four-banger), power-assisted brakes, air conditioning, automatic or man-



ual transmissions, airbags, MacPherson strut suspensions, power steering, and other niceties common to newer cars. All of the rest of the mechanical components are left intact and operable as well, and about the only things that need to be changed are the wheels and tires—and that's just to doll up the buggy. It is also necessary to graft new headlights and taillights onto the car's wiring harness.

For the prototype car, the company ripped out the carpeting and padding and just painted the surfaces with a stipple paint. The stock front bucket seats and rear bench were re-covered with Dusty Jade Naugahyde. To match the upholstery, the dash was freshened with a coat of top-quality custom-mixed PPG paint designed for use on vinyl surfaces, as was the steering wheel. The seatbelt upper mounts attach to the rollbar, which also does double duty as a center top bow for the bikini top. The windshield frame is also tied into the new structural members and is made of round tubing.



The windshield is a new component, tooled especially for this vehicle.

The Fun Car is just about as simple as you can get. It is a lot like VW-based beach buggies such as the Meyers Manx, both in terms of simplicity of the build and its attitude. Who can resist the happy-face grin and friendly attitude of the Fun Car and its potential for living up to its name? The kit consists of body components, the interior tub, windshield, windshield frame, rollbar, and reinforcements and will retail for less than \$4,000. Donor cars range anywhere from \$1,000-\$3,000, and the company recom-

mends finding one that does not have structural damage. Fun Car Company is working on a host of optional gear for this open runabout, including soft doors, eisenglas side windows, and a lift-out bin to serve as a lockable rear storage compartment.

It won't be long before Fun Car joins the ranks of resort vehicles around the world. We've rented surrey-top Jeeps in Hawaii, topless VW

coupes in Cancun, Mini Mokes on Catalina Island, and Manx-style buggies elsewhere in Mexico. It also wouldn't surprise us to see Fun Cars on the streets of retirement villages, being towed behind motor homes, or even fitted with surfboard racks. **KC**

### SOURCE

**Fun Car Company**  
Dept. KC  
5700 Frazho Rd.  
Warren, MI 48091  
800/275-9572

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## Grand National Muscle



## Grand

■ By Harold Pace

D&R Replicars in Pennsylvania has built Countach clones (the Deceptor) and Diablo doubles (Python) in a wide variety of configurations and colors. However, when Rick Greco (the R in D&R) wanted something different for his personal wheels, he decided he would really rather have a Buick—Grand National, that is. As in 245 hp and 355 lbs-ft of torque, which is enough to turn this 2,700-pound Deceptor convertible into a real asphalt-pounder.

The 3.8L turbocharged V-6 was pried out of an '87 Buick Grand National and bolted to a '79 Buick Riviera three-speed automatic transmission for midship mounting in the former Fiero engine bay. For those unfamiliar with the Grand National, it was a limited-production musclecar built from 1984 to 1987. It incorporated some impressive turbocharger

technology and turned the 3,500-pound Regal-based road warrior into a Corvette-crusher of the first degree—at least in acceleration. A final version, the GNX, was built in small numbers in 1987 with a different turbocharger, more boost, and improved cylinder-head flow. This upped the

ante to 300 hp at 4,400 rpm, with torque climbing to 420 lbs-ft at 2,400 rpm. Although Greco's Deceptor uses the normal GN engine, he is pleased there is potential for more punch if he should feel the urge.

The chassis is an uncut Fiero unit, as the 25th Anniversary model Deceptor has the front wheel opening moved forward from the stock location. D&R's 5000 model requires a frame stretch. Springs and suspension on the yellow car are stock. Those spectacular doors are latched by Cadillac power trunk pulldowns that stop rookies from slamming too hard and snug down the door for a tight fit.

The special nature of this car goes beyond the engine. For starters, it is a convertible. D&R now offers this removable top on all its models for about \$500 extra. Once it's removed, you find yourself staring at the striking body-color-trimmed seats, covered

in softside vinyl that looks like leather but is more weather-tolerant for top-down use. Gauges are VDO units set up to work with the Buick wiring harness. Most Deceptors use a stock Fiero wiring harness. A Grant Signature series steering wheel is capped with a D&R cover plate.

Sounds are supplied by an Alpine CD player with an Alpine amplifier and MB Quartz speakers. A Fiero air-conditioning unit was matched up to the Buick compressor. Finally, a set of custom floor mats and new carpet complete the interior.

## SOURCE

D&R Replicars  
Dept. KC  
525 Haycock Run Rd.  
Kinterville, PA 18930  
610/847-2188

turnkey price on one similar to this would run about \$40,000. Of course, the basic kit costs \$5,995, and the "complete" kit is \$11,200. This includes the basic kit plus all the interior pieces (minus upholstery), pre-hinged doors, the trunk, and wiring. You could do your own scrounging and maybe even come up with a GNX (don't get your hopes up too much—

they only built 500). Or you could add some go-fast stuff from the aftermarket. For that matter, 170-200hp turbo 3.8L motors were fitted to other Buicks from the early '80s on, and these should be much cheaper in junkyards than real Grand National

pieces.

At any rate, the 3,500-pound Grand National ran the quarter-mile in 14.7 seconds at 94 mph, and the GNX cut that to 13.4 at 104 mph. Imagine what this power could do in a lightweight kit, and you have the ingredients of true supercar performance. Of course, with much more power you would want to add bigger brakes and some suspension work as well. But that's why guys like Rick Greco build concept cars like this. They make you think—and may just give you a few ideas of your own. **KC**



PHOTOGRAPHY: HAROLD PACE





# MONEY MAKERS

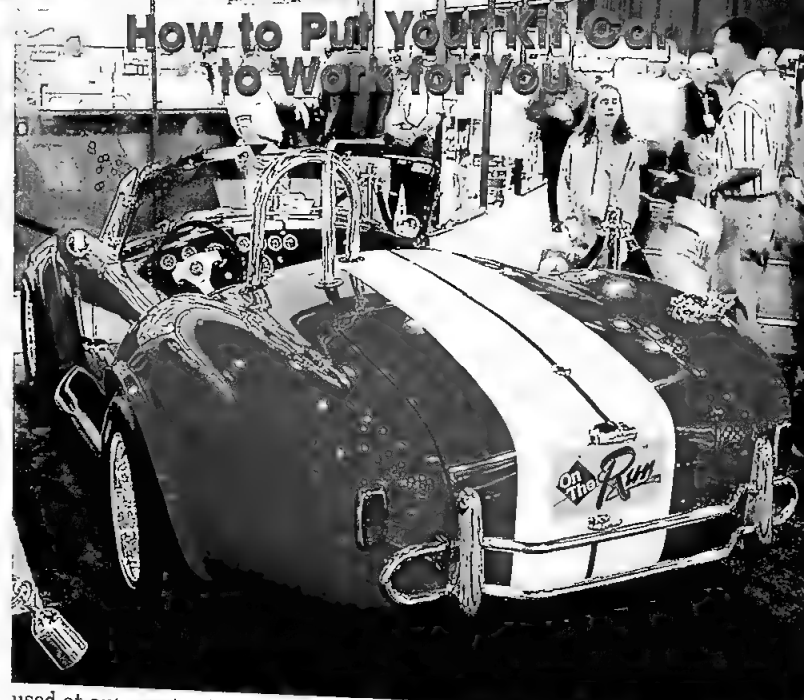
■ By Jim Youngs

In our never-ending quest to find new and exciting things to do with our homebuilt cars, we are always on the lookout for novel ideas that we can share with others in this hobby. We all enjoy car shows, parades, and club outings to local spots, but we also frequently tire of such activities and always seem to be looking for more and different ways to enjoy our cars. Actually, any excuse to use our kit cars will work, but how about making some money back on the project? How about putting our cars to work for us? Is that possible? Well, yes, it is possible, and we've gathered some examples of fellow kit-car enthusiasts who have reaped the financial benefits of having a working mistress.

We've told you about a unique tour company, California Dreamin' Topless Tours (see *Kit Car*, Mar. '97), that uses sports-car replicas (Cobra, Speedster, Spyder), along with three current convertibles, to tour some of the exciting roads and fascinating places of Northern California. Bob Bondurant, famous for his Cobra driving exploits that helped Shelby beat the Italians in 1965, uses Superformance replicas in his School of High-Performance Driving in Phoenix (see *Kit Car*, July '96). We know of a kit-car company that built Viperesque stereo demonstrators based on its rebody components for a chain of electronics stores. We've seen kit cars



46 KIT CAR



PHOTOGRAPHY: STEVE TEMPLE

used at auto parts stores, car dealerships, paint shops, and other retail and service businesses to attract attention and draw in customers.

Movie and television production, especially for West Coast builders and owners, can be a lucrative possibility. We've recently been contacted by several production companies looking for futuristic cars to use in a sci-fi movie, hot exotics to use on a TV show, and a Cobra replica for an advertising campaign. Elsewhere in this piece we've included photos of some cars you may recognize.

If making money with your kit car is something in which you'd be interested, keep in mind that it probably has to be a very clean, well-built vehicle. It will also doubtless take some legwork to find potential jobs for your car. You need to

act as an agent for the car and find some promotional possibilities that would fit. We have recently found a couple of interesting stories in which a kit car is employed, much as a supermodel would be, to attract attention and promote another product.

## May I Have Your Attention?

For many years, businesses have used all sorts of visual devices to attract attention—kleig lights, balloons, banners, flags, signs, clowns, big animals, and such—but few of them have the kind of stop-'em-in-their-tracks ability that a beautiful Cobra replica has. We've even seen guys heading for the hardware store, clenching their weekend honey-do lists, just slam on the brakes and make a U-turn just to take a look at an exotic car sitting in a parking lot.

Alan Dempsey took 3½ years to build a custom Everett-Morrison Cobra replica that is outstanding both in terms of appearance and mechanics. His intent was to build a quality show car to display for a couple of years, then maybe race it. At the time of this writing, the car has been displayed six times and has

taken home First Place trophies each time, plus three Best of Show laurels.

As we said earlier, there must be life beyond car shows, and Alan certainly found a nice, relatively steady, executive-level job for his beautiful red car. Alan hooked up with Mobil to use his car for several promotional purposes. The Cobra replica has been used to attract attention for new Mobil service station openings, and apparently it does an admirable job of bringing folks in. Most recently, Mobil arranged to ship the Dempsey car from its home in Virginia to Las Vegas, where it served as an enticing element of a huge exposition display at the company's international convention. There it was, among other lofty elements of the convention—Al Unser Jr., Rick Mears, the Beach Boys, to name just a few—sitting alongside some Mobil gas pumps in a fullsize, completely stocked On the Run convenience store and gas station. The car got plenty of attention during the convention and made its owner justifiably proud.

Alan purchased the Everett-Morrison in three separate stages and completed each stage before moving on to the next. The chassis came first and was fitted with a narrowed Ford 9-inch rear from a Lincoln and

located with a four-link setup and Panhard bar, suspended by Carrera adjustable coilovers. The frontend sports a Morrison tubular control-arm configuration with Carrera adjustable coilovers. Spindles were hand-fabricated along with the hubs, and Wilwood disc brakes are positioned at all four corners. All of the brake lines, fuel lines, and electricals are routed inside the 4-inch-round frame tubes for a very clean appearance. Engine and transmission mounts were replaced with plates, and the radiator bracketry was reconfigured so that a large Winston-Cup-style radiator could be placed. Goodyear Eagle Vintage Racing rubber (8 x 26-15s in the front and 11 x 26.5-15s in the rear) wraps real polished Halibrand (9s and 11s) knock-off wheels.

Once the chassis was well along, Bill Parham of Southern Automotive built a killer 427ci mill, bored and stroked and fitted with a Comp cam, Ford tunnel-port intake, a pair of BG-modified Holley 600-cfm carbs, Dove aluminum heads, and Race Fab headers. The balanced and blueprinted engine churns out 550 hp and is coupled to a Richmond Gear five-speed and Hayes-Borg clutch. Alan credits Matt Wert at Race Fab Engineering in Chesapeake, Virginia, with fabricating any piece that couldn't be sourced or anything that they thought

could be made better.

The E-M body was delivered with a gelcoat finish on most surfaces, and all holes were predrilled or cut by the manufacturer. After the body was prefit to the finished chassis, it was meticulously prepped for painting and then painted inside and out, with the first primer coat allowed to dry for 30 days to keep shrinkage to a



minimum. Then the second primer was allowed to cure for three months. The basecoats were applied, followed by clearcoat everywhere except the underside of the cockpit and the trunk compartment. The clear was allowed to dry for two weeks before sanding and polishing.

The interior and detailing was the final stage for Alan. The standard Everett-Morrison seats were covered in black leather with a matching dash cover and door panels.

Instrumentation is by Stewart-Warner, and a handmade wiring harness ties the electrical system together. A Grant steering wheel handles the helm duties, and the cockpit was additionally fitted with racing pedals and an adjustable brake bias control.

Alan hopes to keep his Cobra replica working a little longer, but he admits that, thanks to its salary and fringe benefits, he wants to get another kit project started soon so that his lady in red can retire early and hit the track.

## Supermodel

If you've been reading *Kit Car*, *Hot Rod*, *Car Craft*, or *Mustang and Fords* during the last year, you would have noticed a handsome 289 FIA Cobra replica modeling in a two-page-spread BFGoodrich advertising campaign for Radial T/A tires with the headline "Some snakes are known more for their grip than their bite." That car belongs to Bob Shaw of Operations Plus (714/962-2776), a Unique Motorcars distributor and purveyor of more than 500 mail-order





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# INSIDE JOB

## Tips and Tricks for a Better Interior

By the Kit Car Editors

### HOMEBUILDER HOW-TO

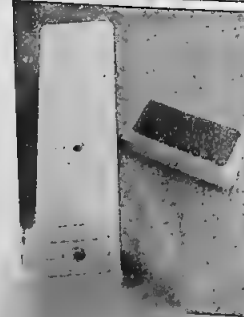
### Tips

Don't we spend a lot of effort making our den, basement, family room (whatever you call that favorite spot in the house where you like to settle in, quaff a few, and watch televised football games) as convenient, comfortable, and personal as we can? The cockpits of our precious rolling stock provide a similar nesting experience and should equally be a place of comfort, convenience, and efficiency and should be personalized to maximize our enjoyment. We spend a lot of time making the outsides of the cars look good and the engine compartments sanitary, so it should follow that the interiors should also be first-rate. We've collected a bunch of tips and tricks for handling some interior dilemmas, found a few products of interest, and will pass along some items that have worked well on our own projects. We hope you will find some ideas here that can help you with your own interior project.



#### Back-Pedaling

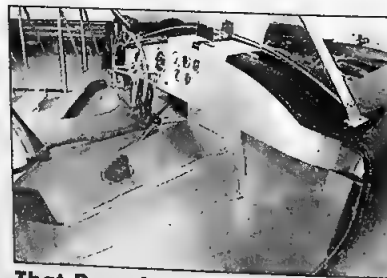
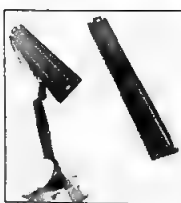
Way down there in the recesses under the dash are the often-ignored pedals, which can be upgraded as a welcome finish detail. Pedal covers come in all shapes and finishes and just attach to the existing pedals. Still others, such as the Big Al's billet throttle pedal assembly shown here, replace the complete stock mechanism. The Jaymar billet-aluminum pedal assembly for VW-based cars is a sharp addition to any footwell. This one would need to be modified some by replacing the single-reservoir brake cylinder with a stock, twin-chamber master-cylinder setup.



50 KIT CAR

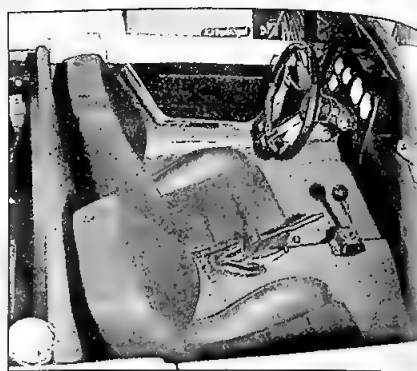
#### Seat Tracks

We've seen several kit-car projects where the seats are bolted in a fixed position on the cockpit floor. If there is room for adjustment, we found some neat, inexpensive seat tracks that could be modified to work with practically any seat. These powdercoated sliders are from Bugpack (714/979-4990) and are designed for VW seats and the company's aftermarket SportSeats, but they would also work well with other aftermarket and salvage-yard models.



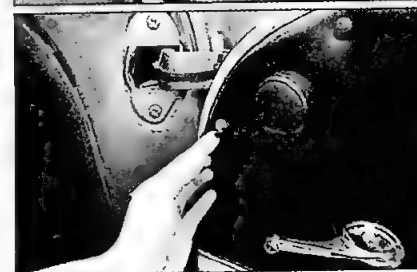
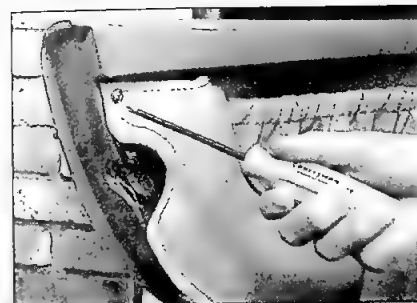
#### That Race Look

To achieve a no-nonsense, race-car look for the interior, consider using aluminum panels for dashes, floors, door panels, transmission humps, and such. Shown here are panels used on the interior of a Factory Five Racing Cobra replica. Homebuilders should be able to make great decorative panels for any car with just a pair of shears, some files, and a rivet tool.



#### Be Seated

Seats are important to give a kit-car interior a distinctive look and provide the optimum in comfort. We like the aftermarket choices, but we've also done the salvage yard search for something suitable and re-covered our finds. Aftermarket seats not only run the gamut of style but also price, depending on how fancy you want to get and how many bells and lumbar supports you think you need. The Brazilian-made low-back sport seats shown here in the unfinished Blaze project are VW-based units from Bugpack (714/979-4990) and sell for less than \$200 each. They have adjustable backs and headrests and are very supportive and comfortable. The Forza seat from Corbeau (801/255-3737) is available in either a standard or wide version and includes five-point harness accommodation, built-in lumbar support, and integrated shoulder support.



#### Panel Screws

When you have to use an exposed piece of hardware to attach interior panels, there are a couple ways to make them look better and more detailed. Chrome- or stainless steel-finish washers are regularly used to attach upholstered panels. They are a cupped washer that accepts a counter-sink screw to afford a finished look. You might even be able to find some trick screw with a nonstandard head, which would further dress up the panel. Some upholsterers, depending on the look of the interior, choose vinyl-covered buttons to hide the fasteners. A nylon collar or washer and a dab of silicone keeps the buttons in place.



#### Hidden Agenda

Ever wonder what holds door panels on a production car? Many companies use hidden panel clips like the ones shown here, which pop into a corresponding hole on the door or inner panel. The intricate silver clips are from Volkswagen cars and can be purchased from VW catalog houses or retrieved from the junkyard. These clips pop into a corresponding hole lined with a little rubber hat, also available from the aftermarket. The wire styles were purchased from an auto-upholstery supply store, and they come in a variety of sizes and styles. Both styles clip into a hole on the upholstery panel and can be adjusted to align with the corresponding mounting holes on the surface to be covered.

#### Seatbelts

Every car needs seatbelts, but consider how your car is used before installing them. This four-point racing harness from Simpson looks cool and serious, but if you are just running around town on errands, they are a pain to get in and out of. It also takes some education for passengers not used to buckling into such a restraint. You may want to consider a retractable lap-and-shoulder style such as those found in newer cars instead. In any seatbelt installation, be sure to closely follow the manufacturer's recommendations to ensure properly mounted and positioned anchors, so as to be safe and effective.



#### Steering Column

Sometimes you just can't find the right size or configuration of steering column at the salvage yard to use in your kit car. Why not use a brand-new one built to fit your car's dimensions? ididit (517/456-4133) offers a variety of polished, painted, and matte-finished steering columns based on a GM style. The company



also has tilt and telescoping models, with either column shift or not, as well as a host of dress-up goodies. The polished-aluminum columns look particularly neat and are a great dress-up for the cockpit and engine compartment.



#### Shifty Character

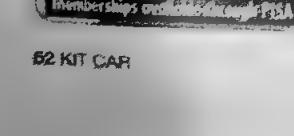
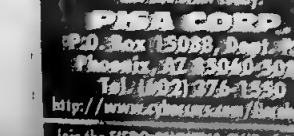
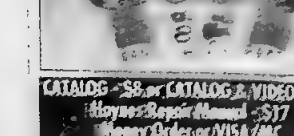
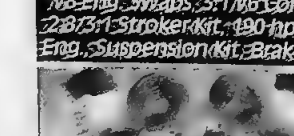
If you're looking for an upgraded shifter for your automatic transmission, you might consider a transmission-mounted unit like this one from Gennie Shifter Company (818/337-2536). Gennie offers a range of styles and shifter lengths, as well as emergency-brake systems. The boot and chrome trim ring are also from the company and are sold separately.



## FIERO H.O.



FINAL



### Power Windows

Adding electric windows to virtually any car is made simpler with this compact system from Auto Lock. (503/242-2517). The kit consists of flexible-cable motor assemblies that utilize the existing window mechanism. It comes with cog adapters to fit over the window-crank spline, to which the cable assembly attaches to turn the crank head. Also included in the kit are panel caps to cover holes, switches, and all the brackets and hardware necessary for the install. Since the cables are flexible, the motor can be positioned virtually anywhere in the door, even in small, tight locations. As the company's name suggests, Autolock also sells power door-lock kits.



### Edge Trim

Known by a variety of names, vinyl edge-lock or trim-lock is great for finishing off a raw edge of fiberglass or an aluminum panel. We have found a multitude of uses for this stuff, which you can purchase by the foot, including adding a flange edge, finishing off an upholstery piece, and holding a piece of carpet on a vertical bulkhead. Trim-lock is available in a variety of sizes and colors, and some kinds even have decorative inlay inserts and weatherstripping attached.



### Le-fover

You don't have to go out and buy upholstery or your seat. Le-fover (leather) is not a difficult, and many companies offer upholstery to accomplish the task. We just received a pair of "TV" high-back seat with a kit from Sewline (800/347-0212), a company specializing in stock and custom "TV" interiors. New leather re-upholstery kits for Fieros are available from PISA (602/376-1550) and Mr. Mike's (800/92-8855). Corvette Central (616/426-3342) offers pieces for Vette interiors.

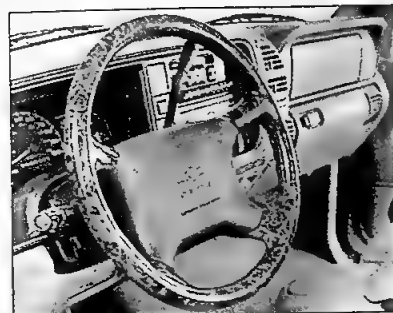


### No Chafing

When you pass wiring and tubing through bulkheads, panels, and body components, it's a very good idea to put a grommet around the opening's edges so that chafing and vibration won't cause premature failure. Grommets come in a variety of sizes and configurations, or you can make your own by splitting rubber hose lengthwise and capping the edges with the homemade grommet. A little dab of silicone will also make sure the grommet stays in place.

### Vinyl Paint

So you don't like the color of your vinyl-covered Fiero dash? Paint it. That's right—you can paint vinyl materials for a lasting color change. Find Mar-Hyde or Sem vinyl spray paint at automotive paint stores and lay on a couple of coats. PPG also makes a custom-mix vinyl spray paint that can be mixed to match virtually any color desired.



### Ring of Style

As more and more newer donor cars are being used for kit projects, steering wheels with airbags pose a slight problem when a new wheel is desired. Swapping an airbag steering wheel with an aftermarket unit should be left to the professionals, due to the explosive charges that activate the bag inside the wheel hub. Grant has just introduced these styling rings that are custom-molded to fit specific manufacturers' airbag steering wheels. The rings are available in simulated burlwood or carbon fiber and install in seconds to spruce up the dash. Information: Grant Products, Dept. KC, 700 Allen Ave., Glendale, CA 91201, 213/849-3171.



### Sound Deadening

Before you cover up the floorpan of your cockpit with carpeting, install some sound-dampening material. Not only will the road noise be reduced, but the car will have a more solid feel. Several companies offer sheets of self-adhesive mat designed to be placed on the floor, behind interior panels, and inside doors and trunks. Shown here is Scosche's (800/621-3695) AMT045 dampening. Road Kill (813/572-9255) and Dynamat, from The Eastwood Company (800/345-1178), are similar products. These companies offer high-temp products as well. **KC**

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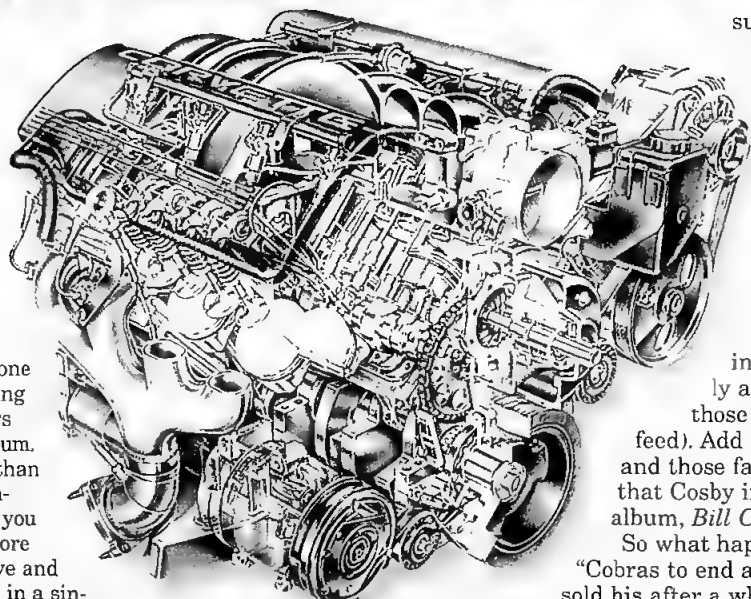
# POWER LUNCH

## Choosing the Right Engine for Your Kit Project

By Harold Pace

Speed costs money...how fast do you want to go? Anyone who has been around racing and high-performance cars has heard that one ad nauseum. But there are costs other than money involved with high-performance mills, and if you want your kit car to be more powerful than a locomotive and able to leap tall buildings in a single bound, you had better be rooted in some cold, hard reality. We at *Kit Car* have seen more than our share of beautiful kits that languish away in garages, seldom driven, until they are finally sold. Nine times out of 10, it is because the owner did not realistically match up his or her real needs with the specifications of their car, particularly as they apply to power choice.

By "real needs," we don't mean that every kit car has to be capable of handling a Newport Beach-to-Bakersfield crawl at 5 p.m. on a 100-degree Friday, with the air on, carrying a spouse and a passel of unruly kids. However, most owners find that kit cars make poor sculptures, and it is better to have some regular activity planned for your new toy when completed. That could range from attending kit-car-club fun runs, autocross racing, amateur drag racing, and reg-



Chevy's LS1 engine is the first complete, all-aluminum small-block offered to the automotive aftermarket. Its new technology achieves 345 hp and 350 lbs-ft of torque from its 5.7L displacement.

ular (if not daily) street use. Depending on the choices you make, you will want to pick an engine and performance level that makes sense. Rule number one is to be brutally honest with yourself as it pertains to how you will use your new vehicle.

### A Tale of Two Cobras

Some of you "experienced" readers may remember a pair of special original Cobras built for ace comedian Bill Cosby and the snake-charmer himself, Carroll Shelby, way back in 1966. Their chrome-bedecked 427s pounded out an explosive 450 horses before two, that's right, two Paxton

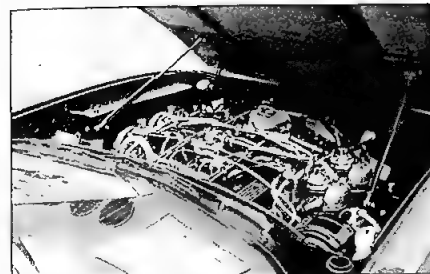
superchargers were wedged down over the twin four-barrels. Shelby claimed 800 hp and a 200-mph top speed, which may have been a tad optimistic, but hey, who knows? They had S/C bodywork and 42-gallon racing fuel tanks (hardly an option with all those hungry barrels to feed). Add on chrome rollbars and those famous sidepipes that Cosby immortalized on his album, *Bill Cosby at 200 MPH*.

So what happened to these "Cobras to end all Cobras"? Cosby sold his after a while, and a later owner ran it off a cliff and was killed. The wreckage was parted out, and what was left was later rebuilt in England as a standard model. Shelby turned his over to the shop as a parts chaser. They couldn't keep engines in it, so they took off the blowers and put on conventional carburetion before selling it. For years, it wore carbs because the blowers were temperamental. It is only now being restored with the Paxtons.

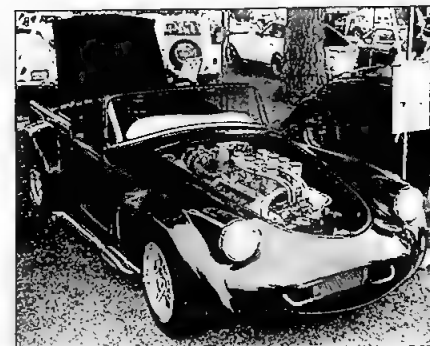
So what is the lesson here? The "Ultimate Cobras" were too much of a pain even for a millionaire car enthusiast and Shelby himself to keep on the road, so they got sold. And in all this time, they were not returned to the "ultimate" specification because it was just not practical. Think about it.

### What Makes Sense?

For starters, let's get real about high performance. Most kit-based



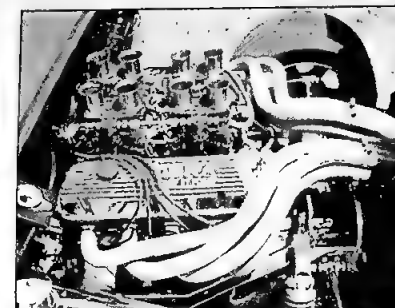
A Jaguar V-12 gives this Ferrari Daytona replica the right look and sound but at the expense of costly maintenance.



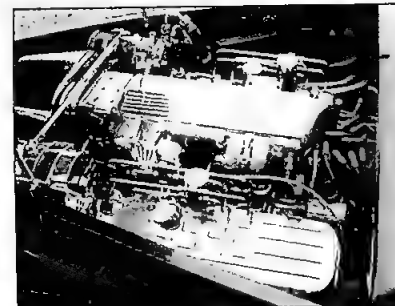
A fuel-injected engine with nitrous is impressive to look at in this Daimler SP-250. However, this is not a combination for daily use.

musclecars (i.e., Cobra, Austin-Healey, and Grand Sport replicas, among others) are not race cars for the most part. There, we said it. Most are modeled (some considerably more closely than others) on cars that were competitive in the '60s. That was 30 years ago. The chassis/tire technology present in most kits (excepting the Ultima and the Intruder) is not up to ferocious horsepower levels. A typical tire combination on a Cobra replica is a 9½-inch rim (15-17-inch diameter) with a medium-sticky street tire. This is not enough tire to put down much over 450 hp, and very few kit car rear-suspension systems can begin to cope with these horsepower levels. And race tires are just not practical. For starters, few are D.O.T. legal, they leak air through the sidewalls, and on a racetrack they will only last a couple of weekends. Besides, original 7-liter street Cobras had either 370hp 428s or 425hp 427s, and the small-block street Cobras had a 271hp 289. Much more power than that is not only non-authentic but simply not needed to provide a very high level of performance.

So what are kit cars good for? They are fun to drive, and they should be driven whenever possible. To do that, you need an engine that provides excitement but doesn't have to be



A small-block Ford with four Webers looks right at home in this GT40 replica, but it will require careful dialing in and can prove finicky in daily use.

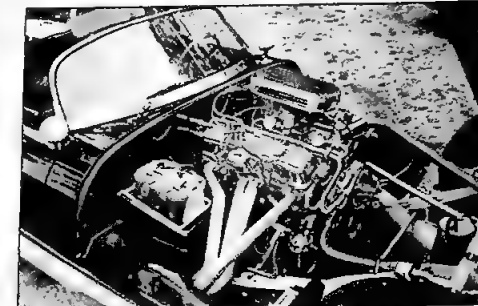


The big-block Chevy in this Willys has 540 inches and uses electronic injection to make the big mill more tractable. This car is used for street duty, but it also makes a good showing in the quarter-mile.

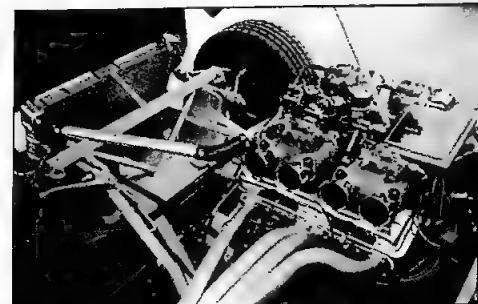
torn down every time you drive it, the way race cars do. More often than not, reliability and dependability are more important attributes.

### Ask the Experts

To find out about streetable performance motors for modern conditions, we talked to the experts at several companies that understand usable horsepower. Our first stop was at Edelbrock Corporation, where we talked to Jim Losee. Although the company also sells parts for all-out racing cars, Edelbrock spends much of its time developing performance packages intended for street use. It can then suggest a group of performance parts that have been developed to work together from the start. To make it easy to pick a stage of tune, Edelbrock breaks its modification packages down into three stages. The most practical are the Performer Packages, which are intended to provide a healthy increase in power from idle to 5,500 rpm. They are available for most common domestic engines, including the small- and big-block V-8s from Ford and Chevy. The purpose of the Performer package is to increase power and torque without incurring driveability problems like rough idle, bad gas mileage, or high maintenance. For instance, Edelbrock



This Beck Lister packs a punched-out small-block with a single four-barrel for simplified tuning. It's quick but very streetable.



Another Lister sports four Webers on a cross-ram manifold and nitrous. It's not a suitable everyday runner but is very effective on the track.

has a package for the 302 Ford that produces around 307 hp with 9:1 compression, so it can use pump gas. It should be remembered that the old 289 Hi-Po engine installed in the original Cobra was rated at 271 hp, used an 11:1 compression ratio, and required premium leaded, which can cost about \$4 per gallon these days at racing fuel dealers.

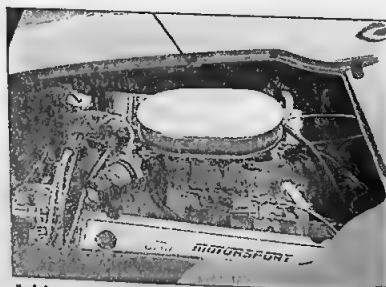
Due to the limited rpm range, Performer packages work well with automatic transmissions and air conditioning. Losee says similar improvements can be made with the 350 Chevy and big-block engines, with most Performer packages delivering about 1 hp per cubic inch, although some big-blocks are less.

The elements of each package vary with the engine, but a typical one for a carbureted engine includes a camshaft matched to the engine size and characteristics, an Edelbrock intake manifold, and a set of headers. Some packages suggest aluminum cylinder heads, which improve breathing, reduce weight, and run cooler than iron heads. The package for the 5.0 Mustang engine (a good choice for kits that must be smog tested) includes a special throttle body, intake manifold, high-flow EGR plate, cam, aluminum cylinder heads, and high-strength head bolts and bushings.

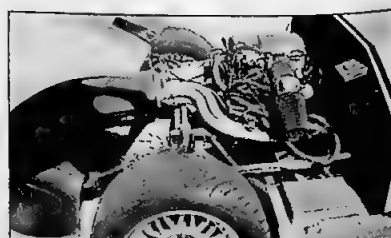


This vintage Puma with a twin-carb VW engine makes a great daily driver with plenty of reliability.

54 KIT CAR



A Lincoln 460 mill provides plenty of power in a moderate state of tune for this Fiberfab Jamaican.



A stock Mustang 5.0 keeps this GT40 replica from being too temperamental. Thanks to a favorable horsepower-to-weight ratio, it is quick enough for street duty.



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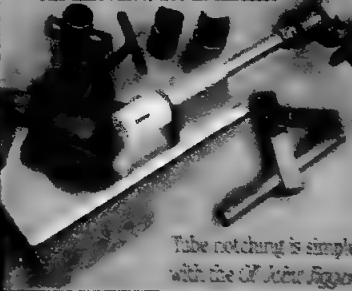
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This setup also gives 800 hp at 5,500 rpm up about 60 hp from stock and is 50-state legal. All the pieces in the packages are available separately, and the Edelbrock Technical Department will go over your requirements and make recommendations.

### More Power

However, many kit builders want more performance.

They are willing to give up some flexibility and dependability for white knuckles but are wise enough not to go all the way to a race engine. For these, Edelbrock makes a combination called the Performer RPM packages. These are designed to provide maximum performance from 1,500 to 6,500 rpm and still run on pump gas. This is about as hot as a street engine should be, as few stock crank/rod assemblies will survive beyond this level, and the price of forged and billet pieces is prohibitive. A representative Performer RPM package would be the one for the 350 Chevy that produces 420 hp by replacing the intake manifold, camshaft, cylinder heads, carburetor, timing chain, headers, and valve gear with special Edelbrock parts.

However, these packages add power at a price. For starters, they have a rougher idle and may not provide suitable vacuum for some accessories. They will burn more fuel, engine wear will be accelerated, and they will probably require more maintenance. You may need a heavier-duty clutch, closer-ratio gears, or a shift kit in your automatic. If you are building a weekend warrior and not a daily driver, the tradeoff may be worth it, but think it over carefully.

For those with serious racing on their minds, there are full-house components available from Edelbrock and others that supply more horsepower at a price. Not only is the ticket higher, but you had better be willing and able to provide constant maintenance and frequent rebuilds—not a good choice for the average kit builder.

And they require a computer to calculate the range of 12,501 to 100,000 miles between rebuilds. They will also work with air conditioning, but a rev limiter that cuts off at 6,000 rpm is needed to keep from damaging the compressor.

The weak link in the VW is the little chassis. It is a sure trip to the poorhouse, the parts house, the hospital—or all three.

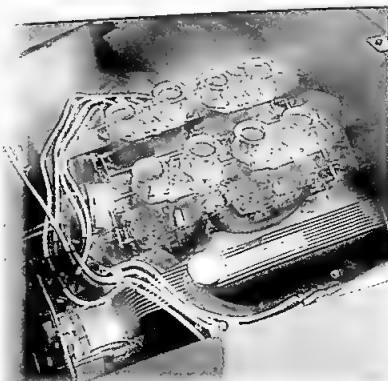
### Making Bugs Fly

Although Edelbrock covers the V-8 market, many *Kit Car* readers opt for the tried-and-true VW-based kits. The Porsche-designed pancake still gets the job done, and CB Performance has done its share of hot ones, ranging from mild street motors to 275hp turbo monsters that will help a Speedster or Spyder replica rip the doors off an unsuspecting Corvette or 911. CB's Bob Tomlinson was kind enough to give us some pointers on VW motivation.

He recommends sticking with about 2 liters and about 150 hp on carbs or 180 with CB's electronic fuel injection. Injection allows finer tuning in various rpm ranges and provides a more flexible power delivery. Don't go over 8.5:1 on compression if you plan on using pump gas and the 90.5mm cylinder barrels. If you exceed these power figures, the VW will build up too much heat, resulting in overheating and shorter engine life. This is because air-cooled engines have higher cylinder-head temperatures than water-cooled engines. Valve sizes should be about 42mm intake and 36mm exhaust. Tomlinson recommends dual carbs and a 296-duration cam with double valvesprings and polished heads.

CB has built a lot of motors to this specification for Porsche Spyder replicas. Tomlinson says they will run approximately 70,000-80,000 miles between rebuilds. They will also work with air conditioning, but a rev limiter that cuts off at 6,000 rpm is needed to keep from damaging the compressor.

The weak link in the VW is the



This Maserati replica disguises a Rover aluminum-block V-8 with Webers. It's something different with an incredible sound.

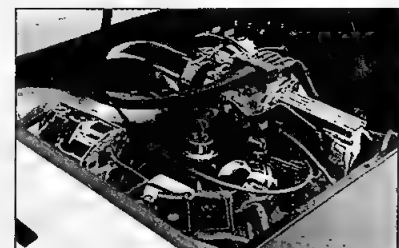
range of power and will require special final drive gears, a limited-slip differential (or locked rearend), and a close-ratio transmission to operate correctly. They will also require you to upgrade your brakes, suspension, and safety equipment to handle the increased performance. Never put too much motor in too

case, which was never designed for high horsepower outputs. CB recommends blueprinting the case and having it heat-treated and relieved for long life. Then it should be aligned-bored and decked. Tomlinson says the stock units are never accurate, and the internal components must be carefully balanced as well, or they will shake themselves apart. All this precision is not cheap, with a typical carbureted 2L mill costing about \$4,000 with all new parts.

For those with hotter tastes, CB has built turbocharged motors pumping out 275 hp on pump gas. They are real eye-openers, with performance in the V-8 league. However, Tomlinson says they have about half the life of an unblown mill. They run hotter and require an oil cooler mounted in the airstream.

### Think About It

These are some good starting points for your kit motor. Analyze what your real uses are, and don't build more motor than you need. Not only will it cost more, but it will be less flexible, have higher maintenance, and be more thirsty. And a higher-tuned motor may require special gearsets, final drive ratios, and heavy-duty brake and suspension pieces to keep your dream car from becoming a handling nightmare. Use a reasonable package, and you can be flying down the road instead of lying under the car. **KC**



The Buick Grand National V-6 in this Countach replica is a powerful, compact choice in stock form and is tractable for daily use.

### SOURCES

**CB Performance**  
Dept. KC  
1715 N. Farmersville Blvd.  
Farmersville, CA 93223  
209/733-8222

**Edelbrock Tech Dept.**  
Dept. KC  
2700 California St.  
Torrance, CA 90503  
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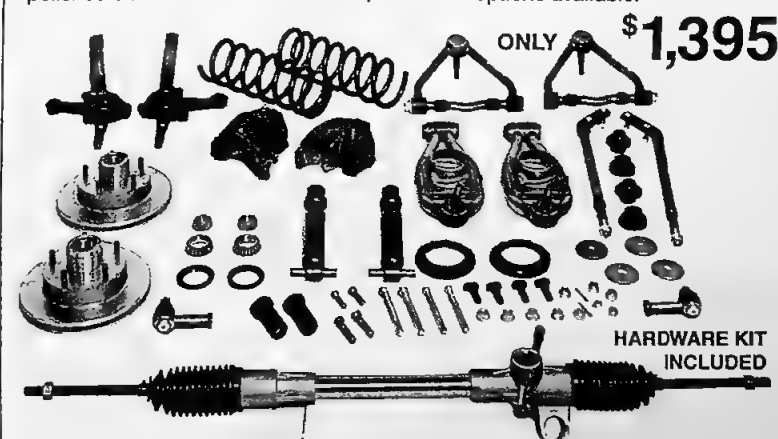


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# SUSPENSION PRIMER

## Exploring the Pros and Cons of Various Front and Rear Setups

By Harold Pace

The kit-car industry is one of the few places where you can still find examples of pretty much every suspension design ever invented. Due to diversity in purpose and donor-car origin, there is a bewildering number of choices for the prospective buyer. Even one given kit may have numerous suspension options. For instance, many Cobra replicas let the buyer choose between Jaguar or Corvette IRS (independent rear suspension) or Ford live-axle systems. Trying to dredge the truth out of all the hoopla can be pretty confusing, so we thought you might like a primer on the more common systems and the advantages/nightmares associated with each.

### Rear Suspension Systems

#### Live Axle

Used at the back of most front-engine/rear-drive sedans. Common on hot-rod kits, Cobra replicas, and Pinto/Mustang II-based kits (some Gazelles and so on).

GOOD: Cheap, easy to locate with four-bar linkage. Better traction for drag racing than an independent system. Best units (9-inch Ford) supported by aftermarket, with gears, limited-slips, and so on available.

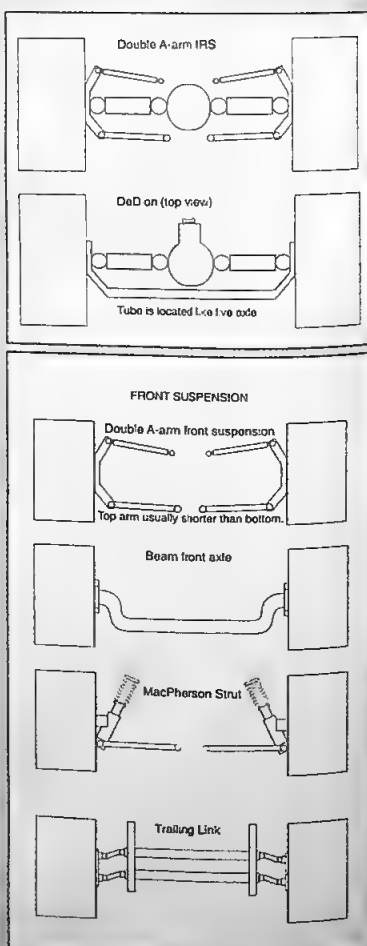
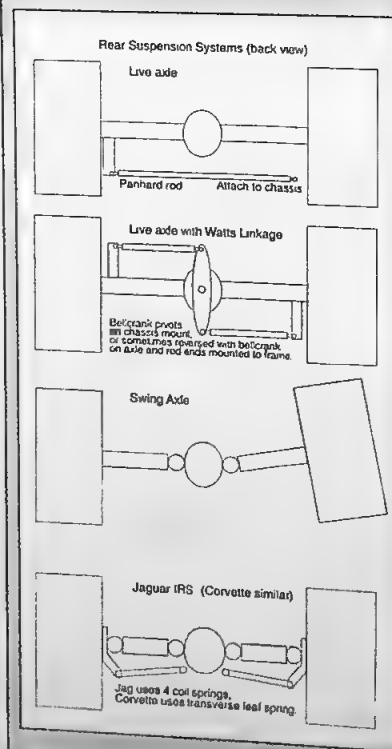
BAD: Inferior to independent systems on rough surfaces. Needs plenty of room for travel. Needs lateral location by Panhard rod or Watts link (see illustration). UGLY: High on unsprung weight (see Buzz Words glossary). Many will need to be narrowed for kit use. For high-performance or track use, should be converted to full-floating configuration where hub is attached to axle housing. This prevents wheel loss due to a broken axle.

A Panhard rod should be as long as possible, mounted low and parallel to axle to minimize side-to-side

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This Sterling shows how a VW suspension behaves at speed. Note how the front outside wheel is folded into positive camber, which causes understeer. The swing-axle rearend has jacked up into positive camber and is causing oversteer. Neither end is working well at this point.



PHOTOGRAPHY: HAROLD PACE & JIM YOUNGS

ILLUSTRATIONS: HAROLD PACE

imbalance. Mounting points must be very strong.

A Watts link uses a bellcrank for equal handling in both directions. It's more complicated and offers very little improvement over a Panhard rod.

#### DeDion

A cross between independent and live-axle systems. Popular in the '50s and used on V-6 Alfa Romeo sedans and currently an option on Caterham Sevens.

GOOD: Less unsprung weight than a live axle. If brakes are inboard, braking loads are fed into chassis instead of axle.

BAD: Not as good as a proper independent system on rough roads. Heavy and difficult to locate side to side.

UGLY: Difficult to fabricate. Hard to align if tube is bent (as many are).

#### Swing Axle

Used on VW, Porsche 356, Triumph Spitfire, and some Mercedes. On most VW-based kits using donors from pre-'68. (VW switched to an IRS in 1969.)

GOOD: Lots of parts on the market to help improve this outdated design. Cries out for camber compensators or Z-bars. VW-based kits can be made into potent autocrossers with proper mods.

BAD: Lots of camber change with roll. Can cause "jacking" where the wheels go into positive camber. High roll center makes for oversteer.

UGLY: If you have a VW-based kit, you are stuck with it unless you go for the '69-and-on Beetles.

#### Jaguar IRS

Used on XKE and all other models since Mk.II sedan. Popular on Cobra replicas and hot rods.

GOOD: Easy packaging makes for a neat installation on many kits. Looks good when detailed. Aftermarket parts available to replace/update most components.

BAD: Outdated geometry with halfshaft providing upper suspension link.

Expensive to overhaul. Brake cooling and maintenance a problem. In stock form, will not put down more than 400 hp as well as live axle.

UGLY: XKE parts rare and valuable, sedan parts must be narrowed before use. If shortening is not done correctly, failure can occur, resulting in loss of wheels and brakes.

#### Corvette IRS

Used on '63-'96 Corvettes. System changed in 1984 to improved geometry and five-link mounting.

## GET A HANDLE ON HANDLING

Here are some good books on suspension and handling. They are available in bookstores, libraries, or through the mail.

*Baja Bugs & Buggies* by Jeff Hibbard. Covers VWs at length, particularly HD parts and off-road.

*How to Make Your Car Handle* by Fred Puhn. Covers suspension design and modification. Easy to read and practical. Focus is on modified street cars and racing. One of the best references.

*Chassis Engineering* by Herb Adams. Covers designing, building, and improving chassis and suspension systems for those who want to build their own. Adams has designed a number of kit cars, including the Jackrabbit, and is a frequent contributor to *Kit Car*.

*Racing and Sports Car Chassis Design* by Michael Costin and David Phipps. Published in 1961, it covers older systems like DeDion, trailing-link, and swing-axle designs. A good basic book, but not a hands-on manual for improving stock pieces.

*Tune to Win* by Carroll Smith. Kit builders really ought to read all of Smith's books, but this one is primarily on suspension tuning for race cars. For serious technotypes. Focus is on race cars, but much is applicable to high-performance street cars as well.



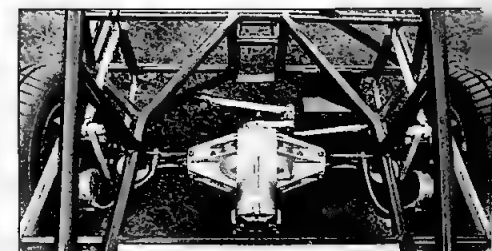
An Autocross-prepared Stingray shows good front suspension geometry—both front wheels are flat to ground, and the car shows little lean.

Improved again in 1989. Probably the best production-based suspension available today, particularly when used with matching Corvette front suspension and brakes. Popular on Cobra and Grand Sport replicas.

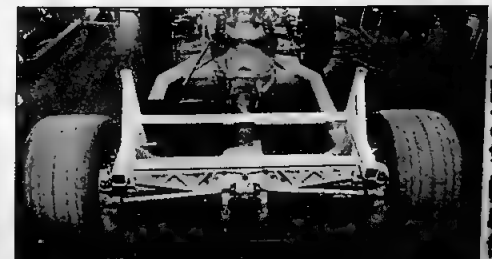
GOOD: Current technology and still in production. Availability excellent. Many performance mods available from aftermarket. Handles high horsepower better than Jag unit.

Outboard brakes are easier to cool and work on than inboard Jag units. BAD: Can be expensive and difficult to retrofit to older kits. Still a compromise compared to fabricated double-A-arm systems. Will not put down power on acceleration as well as live axle.

UGLY: No better technology than Jag until 1984. Best units ('89 and up) not common in wrecking yards.



This Exotic live-axle rear setup is located by a four-bar configuration. Note the Watts linkage.



A late-model Corvette rear uses a composite transverse monoleaf spring and adjustable strut rods.



## SUSPENSION PRIMER

### Fabricated IRS

Various manufacturers. Uses some pieces from donor car, like final drive gears, centersection, or hubs. Everything else fabricated, usually with double-wishbone design. Used on replicas and high-end custom sports cars.

**GOOD:** More adaptable to various kit configurations. Usually better geometry than production-based parts. Generally stronger and easier to ser-

vice. Most look great with billet pieces and anodized fittings.  
**BAD:** Expensive.  
**UGLY:** Hard to tell if geometry is right just by looking (not everyone selling suspension systems is an engineer).

### Front Suspension Systems

#### A-Arm

Available from a variety of donor cars, most common being Mustang

II and Corvette. Used on Cobra replicas, hot rods, and antique-style kits such as Gazelles and so forth.

**GOOD:** Proven technology and generally good handling. Camber changes in correct direction when the car is cornering. Many aftermarket parts to beef up Mustang II and Vette parts, and installation kits available. Easy to package.  
**BAD:** Mustang II geometry not the absolute for high performance.  
**UGLY:** Don't try adapting frontends from other cars without carefully matching characteristics to your rear suspension. Some kits with mismatched donor-car front and rear don't handle properly.

#### Trailing Link

Stock front suspension on all VW models up to the Super Beetle. Used on tons of kits and dune buggies.

**GOOD:** Cheap and available. Heavy-duty parts available from VW aftermarket industry. Easy to adapt to kit chassis. Works well on medium-performance street cars.

**BAD:** Changes camber along with body roll to give lots of understeer. Camber not easily altered. Heavy, and some components prone to failure when used with big tires and subjected to hard cornering. Should be beefed up with off-road parts/hubs/ and so on when used in performance cars.

**UGLY:** Should not be replaced on VW kit cars with swing-axle rear suspension since the only reason the rearend is not deadly is that the frontend isn't working right, either.

#### MacPherson Strut

Used at the front of many cars from the '70s onward. Standard on Fiero-based kits.

**GOOD:** It's already there. Lots of performance parts available to beef it up and add adjustments.

**BAD:** It's not nearly strong or adjustable enough for performance use in stock form.

**UGLY:** Production tolerances on early Fieros are so bad it is difficult to fit some aftermarket parts without alterations. Same frontend used on the Chevette ('nuff said).

#### Straight Axle

Used on the front of some hot-rod/T-bucket kits. Simply, a straight axle connecting the front

wheels, usually with a leaf spring and locating arms.

**GOOD:** Reduces weight on nose for drag racing. Looks right on traditional T-buckets. Used on circle-track cars that run on dirt due to strength.  
**BAD:** Probably the worst front suspension for street use. Even pickups don't use this anymore. Axle tramp under braking. Very high unsprung weight. Bad kickback on rough roads. No camber control.  
**UGLY:** Inferior to all other front suspension systems. Do not use unless you must have The Look. **KC**

## BUZZ WORDS

**Anti-squat:** Rear suspension geometry designed to prevent the car from "squatting" down during acceleration. Important when accelerating. Better controlled with live axle than IRS.

**Anti-dive:** Suspension geometry designed to prevent the nose from dropping during braking.

**Bumpsteer:** A condition caused by incorrect suspension/steering geometry where the wheels at either end toe in or out when the car is braking, cornering, or accelerating. Can cause unstable handling conditions if not properly adjusted.

**Camber curve:** The vertical path followed by the wheels when the car turns into a corner. Determines how well the tire stays in contact with the surface.

**Oversteer:** Where rodeo riders start. Just kidding. Opposite of understeer. "Loose" in NASCAR-speak.

**Roll axis:** A line connecting the front and rear roll centers that the car pivots around in a corner.

**Roll center:** The point around which the body rolls in a corner. There are separate ones for the front and rear suspension. Ideally, they should be at about the same height.

**Understeer:** Cornering condition where the front loses traction before the back. Also called "push" in stock-car circles.

**Unsprung weight:** The weight of components that is not carried by the springs. This includes most suspension parts, the wheels, and tires. Low unsprung weight is better—it makes the car more responsive.



This Mustang front configuration uses tubular control arms and a strut rod with an adjustable coilover shock.



These cast-aluminum front control arms and an adjustable coilover shock make up this Corvette-based front-end setup.

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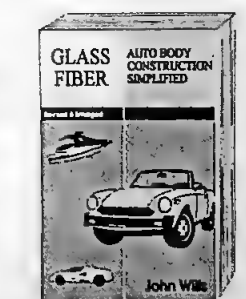
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# FRAME UP

## How to Assemble a Factory Five Cobra Chassis

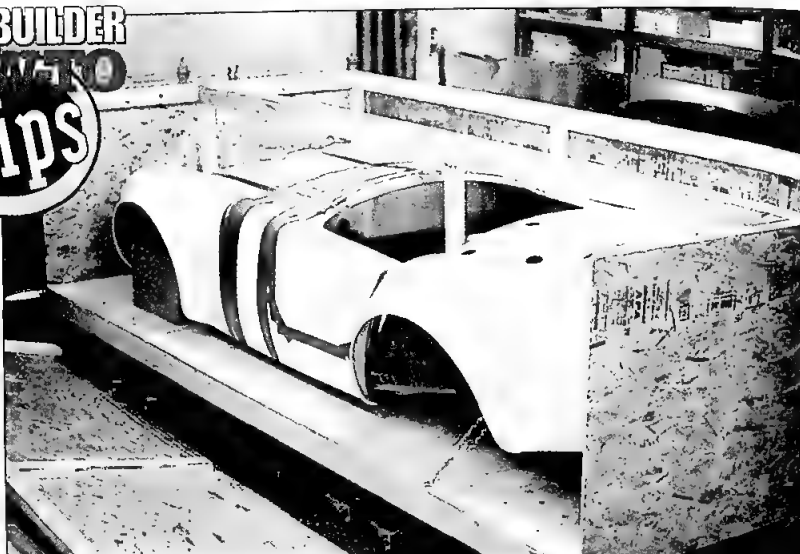
By the Kit Car Editors

**F**actory Five Racing began its business with a relatively simple vision, that of putting a Cobra in the hands of every person who has the skills to build one. To realize that vision, certain criteria had to be established, the most important being affordability. Based on considerable study of the Cobra-replica business, Factory Five set the target for well under \$20,000 to build a complete replica, then went about establishing procedures that would allow it to hit that goal. One major key to the Factory Five program is the use of a single donor car that supplies more than just the engine and drivetrain. The natural donor was the 5.0 Mustang, the performance-car bargain of the last decade.

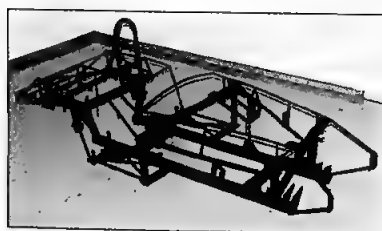
The donor parts needed to build an FFR Cobra replica include the complete engine, transmission, driveshaft, and 8.8-inch rear end assembly with coil springs and quad shocks; the front and rear brake assemblies, master cylinder, emergency-brake handle, and pedal box; front spindles and lower control arms; the radiator and cooling-fan shroud; the fuel tank with integral pump, cap, mounting straps, and fuel filter; the steering rack, shaft, and upper steering column with ignition switch and stalk switches; the gauge cluster; and the computer module and wiring harness for the engine, dash, lights, and fuel tank. You can also utilize the wheels and tires, though you may want to purchase more authentic Cobra fare. Most of the rest of what you need comes with the kit, which sells for \$9,900.

Over the next several issues we will be publishing a series of articles on the complete buildup of a Factory

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This is how the Factory Five Racing kit is shipped to your door. There is a \$350 crating charge, and shipping charges depend on how far from the factory the crate has to travel. Shipping will never exceed \$1,200.



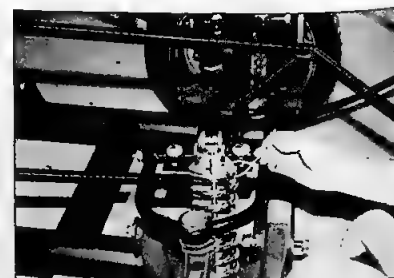
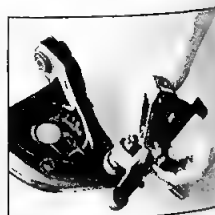
Similar to that on the original, FFR's bare chassis is made of 4-inch round-tube steel with plenty of 3/4-inch square-tube supports and framework. All brackets and mounting points are in place and ready for bolt-on installation.



Carrera adjustable shocks, chromed coilover springs, upper ball joints, tubular upper A-arms, and ball-joint mounts.

Here are the complete front suspension assembly pieces, including the donor spindle and lower control arm. The kit is supplied with

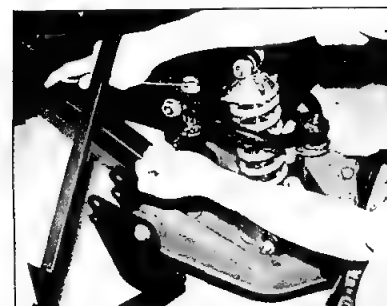
Attach the ball-joint mount to the spindle with the stock strut mounting bolts from the donor. These OEM fasteners are stronger than almost anything a home-builder can buy. The stock ball joint on '84-'93 Fox-body cars is an ultralow-friction piece with improved inner bushings. The Ford Motorsport part number is M-3075-A.



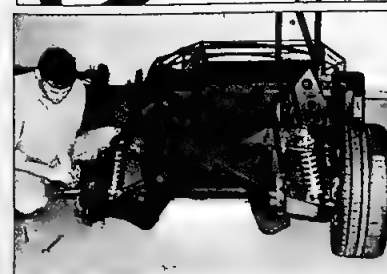
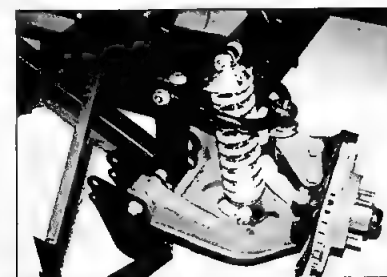
Included with the Carrera coilover shocks are ties and clips to secure the top hat on the assembly, which keeps everything together during installation. The shocks also have urethane bushings. Position the shock on the lower control arm and upper shock mount and bolt in place.

Five Cobra replica. We will concentrate on all the details of building a car at home, from putting together a rolling chassis and powertrain installation to the body and interior assembly—in short, everything it takes to get one of these cars on the open road.

This first installment concerns putting the suspension, drivetrain, pedal assembly, gas tank, and some initial aluminum inner panels in place. Rather than give you some lengthy copy to read, we will show you installation photos with brief descriptions of each step. Keep in mind that you may want to modify or change some of the components as you go along, and the kit has that kind of flexibility. However, the FFR kit was designed to use as many parts as possible from the Mustang donor.



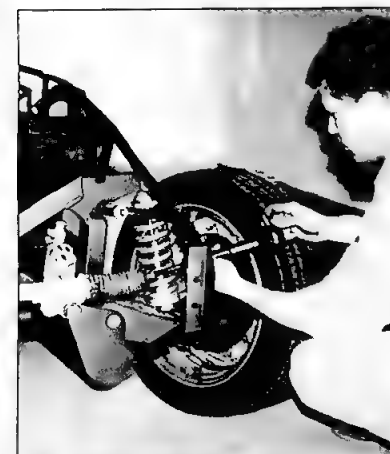
Using Grade 8 bolts and nylock nuts, bolt the tubular A-arm in place. Tighten the bolts lightly at this stage, since final alignment will need to be done once the car is together.



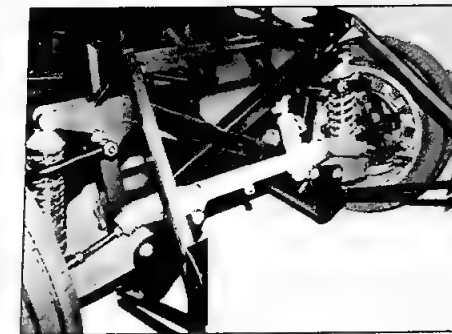
This is one side of the completed front suspension assembly once the disc-brake rotors and hubs are installed. The brake calipers and brake lines come later.



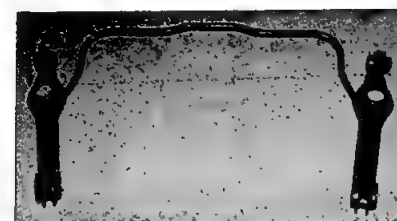
The Mustang steering rack bolts on to brackets on the front crossmember. Factory Five prefers the 15:1-ratio Mustang rack (some early Fox-based cars used an 18:1), which the company converts to manual duty by removing the tubes and lines for the power assist. These Ford units don't rely on power-steering fluid for lubrication, which allows them to be utilized manually. If power steering is desired, you will need the power-steering bracket from a non-A/C 5.0 motor. Nonair-conditioned cars locate the pump higher, and this allows the pump to clear the steering shaft.



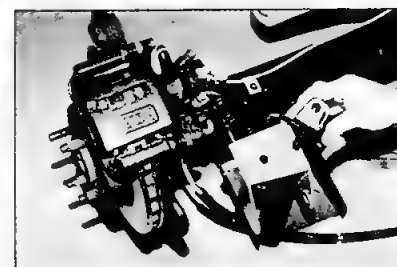
The track of the FFR replica is 3/4-inch narrower than the donor's per side so that the wheels will have an original look. When the tie rods are installed, they need to be shortened by 3/4 inch on each side so that the wheels point straight ahead. The tie rod is mounted to the spindle with a castle nut and cotter pin.



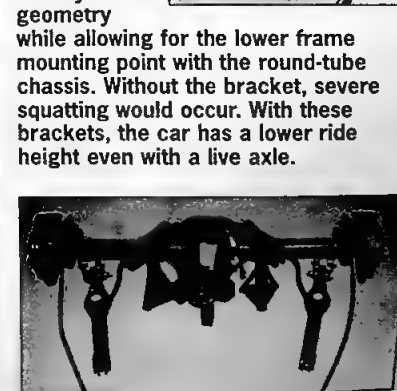
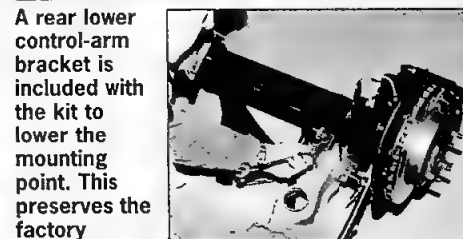
Mount the tires and wheels, and this is what the completed front end assembly should look like. Now you're ready to move on to the rear suspension setup.



Here are the rear antiroll bar and stock lower control arms.



A rear lower control-arm bracket is included with the kit to lower the mounting point. This preserves the factory geometry while allowing for the lower frame mounting point with the round-tube chassis. Without the bracket, severe squatting would occur. With these brackets, the car has a lower ride height even with a live axle.



Bolt on the stock upper control arms, and the 8.8-inch rear end is ready to install on the chassis.



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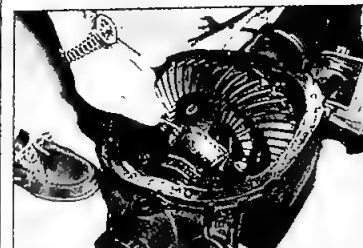
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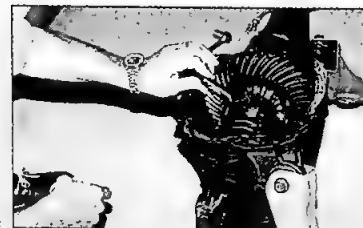
64 KIT CAR

## FRAME UP

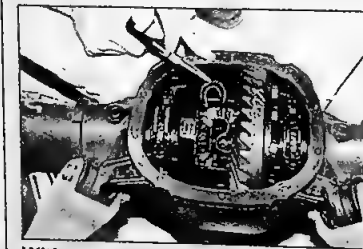
### ADDING REAR DISC BRAKES



The axles must be removed so that a new set of backing plates can be installed. The small bolt on the center-portion in the photo is the retainer that prevents the center shaft from sliding out.



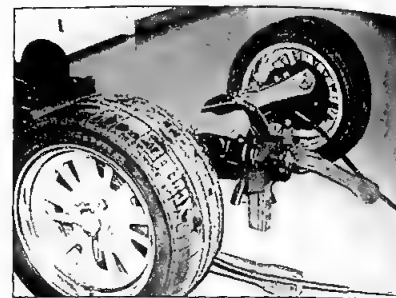
Slide the shaft out to gain access to the C-clips that retain the axles in place.



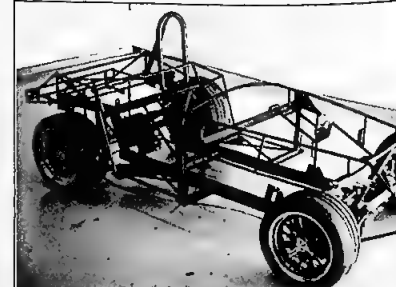
With a pair of needle-nose pliers, remove the C-clips from the end of both axleshafts.



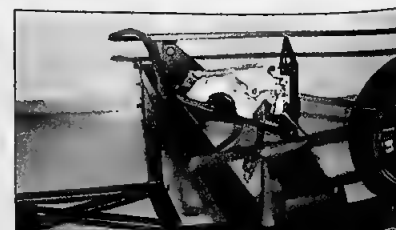
Slide the axles out, install the new backing plates, and reinstall the axles, C-clips and shaft, and the shaft retainer bolt. The discs, calipers, and lines are a straight-forward bolt-on from here.



Slide the rearend assembly under the chassis and bolt the control arms to the brackets. When installing the rear springs, it is important that the spring not move in the seat. Cut a slit in the stock rubber gasket to insert it in the seat. Ride height of the rear is adjustable by turning the coil spring in its seat to either raise or lower the car. The rearend is installed and waiting. Once the engine and transmission are in place, the driveshaft has to be shortened by 10 1/2 inches.



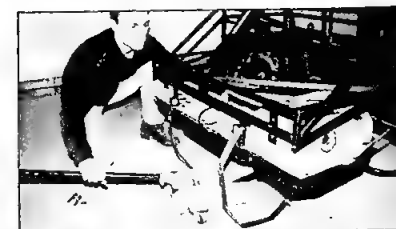
The rolling chassis is now ready for routing and connection of the brake lines.



The stock pedal-box assembly easily slides into position on its bracket and is bolted into place.



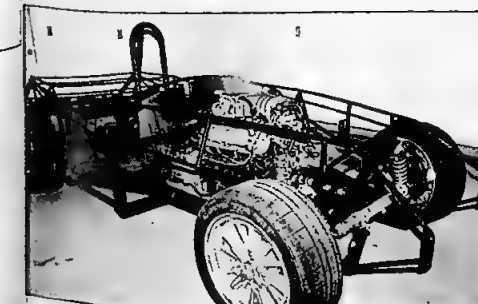
Spread a bead of silicone on the upper tubes in the rear of the engine compartment to add strength and keep the aluminum firewall panel from vibrating or producing air leaks. The panel should be riveted in place starting from the middle and working toward the outside.



The stock gas tank and tank straps are used for a simple bolt-in installation.

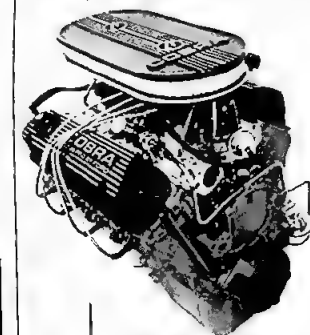


After the engine and transmission are cleaned up, the whole package is lowered into place on the chassis, where it is bolted to the pre-positioned motor mounts.



We're ready to roll on to the next stage. This is the virtually complete chassis, with the exception of items such as plumbing, wiring, the radiator install, and the rest of the aluminum inner panels. **KC**

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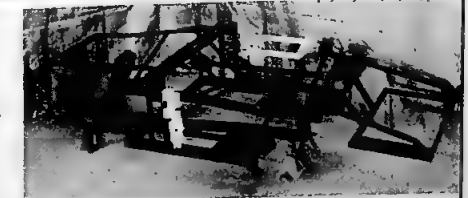
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Cavaliere Cars brought along a pair of Saxons, a Sebring, and a Cobra to stop folks in the aisles. An aluminum pole holding the logo unexpectedly provided a strength test for one of the cars when it blew over and hit the rear fender. No damage resulted, and a prospective customer was most impressed.

# TURKEY RUN

## Florida's Largest Car Show Draws From Every Segment and Gives Us a Lot to Be Thankful For

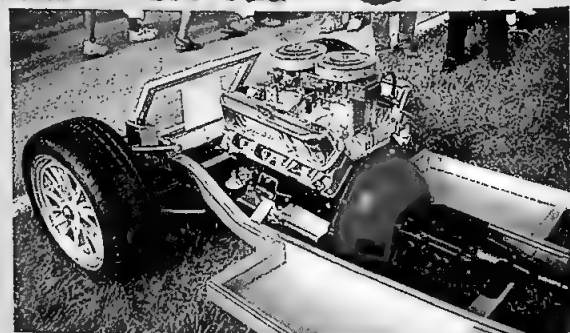
■ By Joe Greeves

**T**he Daytona Turkey Run, held in the infield of the Daytona International Speedway, is not a kit-car show in the usual sense, but don't let that stop you. Intermingled among the 4,641 hot rods, customs, antiques, and bikes, there are probably more individual kit cars, clubs, and manufacturers than you'd see at most of the smaller, kits-only shows. Plus, there's a whole lot more.

Do you need seats, gauges, performance equipment, tools? Somewhere in the collection of 3,000 swap-meet vendors, you'll probably find exactly what you want. Have you decided you'd prefer to buy rather than build, or is it time to sell your current kit car? Hundreds of vehicles change hands every year at the Turkey Run Car Corral. Or maybe it's time to talk to individual manufacturers face to face and look at their cars before taking that big step.

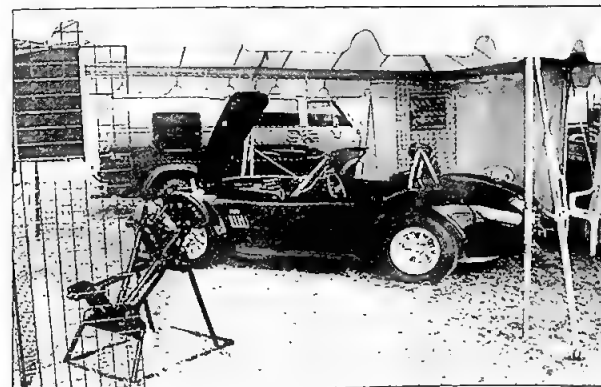
Several Southern companies were on hand, showing their finest. Unique Motorcars (205/546-3798) brought an '66 KIT CAR

Bros. Little Car Company displayed several vintage hot-rod Fords in various stages of completion so that customers could see the quality of the hidden work and how the suspensions go together.

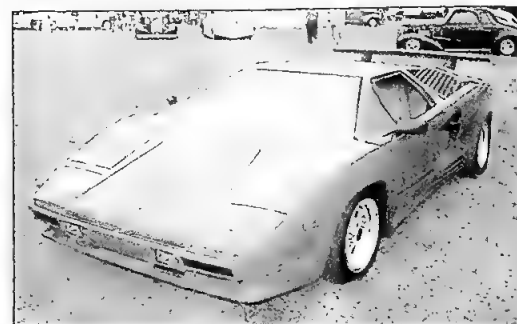


The huge 427FE engine, top-loader four-speed, and Jag rear nicely characterized the Cobra Shop's tube chassis as one to be reckoned with.

PHOTOGRAPHY: JOE GREEVES



Gentry Motors offers turnkey-only Cobra replicas and had two handsome cars on hand to show the company's quality and craftsmanship.



Dozens of replica drivers, like the owner of this Countach replica, pulled in, parked, locked up, and began wandering the rows of custom and exotic vehicles and thousands of swap-meet parts.

impressive six-car Cobra display from Gadsden, Alabama. You could see, firsthand, different combinations of engines, suspensions, and body styles, ranging from the company's lean and well-balanced 289 FIA model to the asphalt-buckling 427SC. Company owners Maurice and Allan Weaver regularly spend the Thanksgiving weekend at the Speedway meeting friends and customers and chatting with potential owners.

Candido Cavaliere, of Cavaliere Cars in Lakeland, Florida (941/425-4102), couldn't have planned a better demonstration if he tried. As he was telling a customer about the durability of the gelcoat finish on one of his Classic Roadsters Saxon demo cars, an aluminum sign pole holding the company logo blew over in a gust of wind and crashed down on the car's rear fender. Both the owner and potential customer looked for signs of damage and found none. Cavaliere assured the customer that while he had confidence in his cars, this was not a regularly scheduled demonstration. His Saxon and Sebring cars, replicas of British Healey sports cars, are updated with roll-up windows and tight-fitting tops. Depending on

options, the finished cars carry price tags ranging from \$24,000-\$34,000.

As you might expect from an event that used to be called the Turkey Rod Run, there is also plenty of interest in the icons of the street-rod hobby. Bob and Diane Hoppel of Bros. Little Car Company, Daytona, Florida (904/756-

0096), had chassis, suspensions, powerplants, and accessories on display, along with a variety of vintage hot-rod Fords in different stages of completion. Bob says, "Customers learn more about the cars we build when they see them before the body goes on." One look at the carefully welded, rectangular-tube chassis and you'll understand why the couple is proud to display them. Bob and Diane are dealers for Chassis Engineering, Brookville (steel)

Roadster bodies, and Gibbon Fiberglass bodies. They can supply any combination of parts, chassis, bodies, or turnkey vehicles.

Not actually a kit manufacturer in the technical sense, Gentry Motor Works, Decatur, Alabama (205/355-9644), was on hand, showing its turnkey Cobras and answering questions from the crowd. Gentry has reverse-engineered several original cars, and the company's replica versions retain all the

original flavor without some of the traditional headaches, such as overheated foot boxes and rough-running engines. The company offers only completed cars, about 20 each

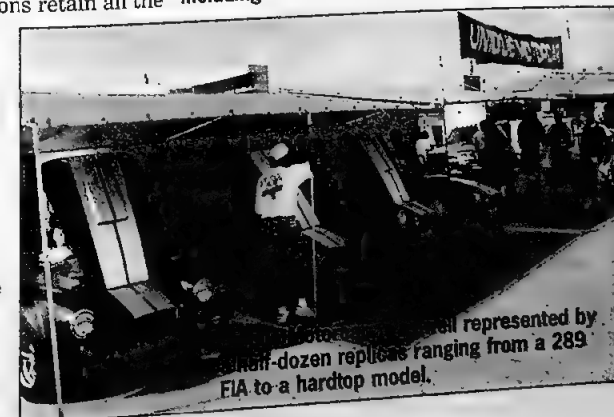
year, all built to customer specifications, using top-quality materials and craftsmanship. Prices for a 427 start at \$65,000, with 289 models going for about \$62,000.

Besides kit-oriented activities, the Turkey Run offers a whole bunch more, like great giveaways throughout the weekend. A custom '55 Chevy two-door was raffled off by event sponsors Daytona Street Rods. The raffle proceeds support many charitable causes and made one lucky spectator, Fe Atienza, very happy. A Discount Auto Parts 350 Chevy V-8 was given away to Bob Linz, with a remarkably similar effect. A museum-quality '61 Chevy hardtop with 61,000 original miles will be on display throughout the year and will meet its new owner at the '97 edition of the Turkey Run.

If you'd like to be part of the balmy fall breezes, thousands of cars, and friendly folk at Florida's largest automobile show, call Rick Finzer of Daytona Street Rods (904/767-9070) or Rick D'Louhy of the Daytona Racing District (904/255-7355) for more information about the '97 Thanksgiving weekend event. You may also want to ask about Florida's second-largest show, the Daytona Spring '97 Speedway Spectacular to be held March 22-23. **KC**



In addition to all the completed cars, the Turkey Run is also a veritable smorgasbord for performance gear. Practically everything is displayed, including these turnkey engines.



Motorcars represented by a dozen replicas ranging from a 289 FIA to a hardtop model.



# Rodster

New Life and a Lot More Fun for a Sport/Utility Vehicle



By Jim Youngs

Now, here's a custom car that doesn't pretend to be something it's not. It's not a copy of anything, yet it has a very likable persona. It's a quasi-street rod, but without all the high-price-tag components, questionable reliability, and value that would preclude extensive use. It's a rebody that takes advantage of its modern donor platform and related components, but it transforms a vehicle you wouldn't give a second glance to into something nostalgic and with plenty of character.

The Rodster is the brainchild of Henry Caroselli, a talented designer

with a background in award-winning advertising work for the Mazda RX-7, the Miata, and a stint at the Magic Kingdom. His ownership of some rather eclectic cars—a

'64 Lotus 7, '65 Lotus Elan, '50 VW Bug, and '52 Hudson Hornet—over the years may explain some of the Rodster's novel look. Caroselli is a street-rod fan, appreciates vintage European sports cars, and has an affinity for musclecars. His intent with the Rodster was to design a cruisin' machine with several styling traits of historic

automobilia and place it on a stout, modern chassis that would make the build easy and make the finished car reliable and dependable and a drive-anywhere looker.

Caroselli liked the fact that the Chevy S-10 Blazer ('82-'94) was produced in huge quantities and that the aftermarket was loaded with goodies to improve the suspension, increase the horsepower, and improve the shifting. The S-10 also was supported on a full-frame ladder chassis with a front-engine/rear-drive configuration. You can get either an automatic or manual transmission and either the Iron Duke four-banger or a 4.3L V-6.

Once the platform was settled on, he enlisted the aid of Todd Gerstenberger, the design manager for the Brubaker Box kit car, to help with the fiberglass tooling. To keep things as simple as possible, and to overcome traditional kit-car problems, Caroselli designed

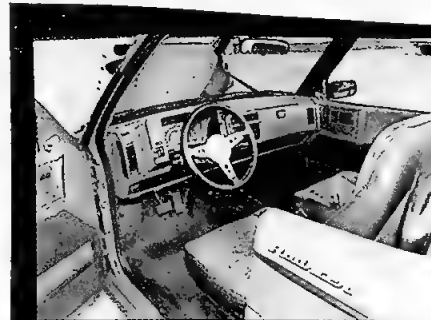
the body panels to utilize the donor components such as the doors. The S-10 doors remain untouched, but you'll notice that the rear clip, tonneau, and front clip continue the vehicle's lines and incorporate some of the body detailing. The body panels are all flanged and reinforced at critical points to ensure a good fit without hours of alignment time.

Caroselli recommends getting the chassis in shape before proceeding to the body panels. It's a good idea to go through the brakes, transmission, and engine to ensure a mechanically healthy platform. Lower the front and rear suspension 3 inches, and trial-fit the wheels and tires of your choice. Lowering can be accomplished in several ways, but the easiest is to use dropped lower A-arms in front to relocate the coil springs. The rear can be lowered either with de-arched leaf springs, or, even easier, by using lowering blocks between the leaf springs and the axle and longer U-bolts.

Further prepping the platform for the body pieces involves moving the battery to the rear of the vehicle, and Caroselli offers a relocater kit for that purpose. Next, you'll need to remove the bumpers, grille, hood, fenders, radiator, rear seat, tailgate, and spare tire and take out the rear side glass. Pull out the reciprocating saw and a new blade and cut the header above the windshield and the rear body shell. The cuts don't have to be too neat, since the areas get covered by new fiberglass pieces. The rear frame horns and door frame also need to be trimmed.

The first step toward installing the kit on the donor platform is to fit the sport bar and attach the seatbelts. A trial-fit of the rear body section goes a long way toward proper alignment. Once it is fitted, it is glued along the doorjamb and attached along the pan. The doors need to be trimmed for a good seam, and then the trunklid hinged with the strap hinges and

latched in place using the stock S-10 latch hardware. A U-shaped piece of tubing is used to reroute the gas fill line to its position in the trunk. Fitting the tonneau comes next, followed by attaching the front crossbar, which locates the nose-piece hinge pin. The front fenders will need to be trimmed a bit and the quarter-panels, inner



The Rodster retains the stock Chevy S-10 interior, which can include such things as cruise control, air conditioning, a glovebox—and weird instrumentation.

fender liners, and latches added to complete the front-clip install. From this point, a new radiator is installed, the nose is placed on its hinge, the rocker covers are installed, the lights are placed, and the windshield header is glued in place. The kit includes a window frame eliminator component, which is added to the side of the windshield post and post caps that cover the removed window post.

That's the basic kit build, and since there is no elaborate wiring to accomplish or interior components to add, the Rodster is ready for your custom touches and a trip to the paint shop. The demo vehicle we photographed had a completely stock S-10 interior, which is immediately familiar to anyone who hops behind the wheel. The 4.3L engine had been warmed up a little with some aftermarket goodies and a snarly exhaust, and the transmission got a shift kit for the four-speed automatic. The S-10 windshield is maintained, as are all of the systems such as windshield wipers, air conditioning, gauges, and controls like electric windows, cruise control, and such.

Caroselli carries a bunch of options for the

The "prime-evil" parts gofer wears the prototype lift-off hardtop, which weighs in at only 32 pounds. It is made of fiberglass composite and has an acrylic rear window.

Rodster, including a new lift-off hardtop that emulates a roadster ragtop. The top only weighs 32 pounds and is easily and quickly removable. The Rodster is built using hand-laminated molding techniques with plenty of Coremat and carbon-fiber reinforcement. The parts come in a white-gel-coat finish and are smooth and straight as they come out of the molds. Caroselli even reinforces the crossmember of the rear clip with a fiberglass grid to ensure strength across the width of the car.

There is lots of room for really personalizing the Rodster. One example is the "prime-evil" model sitting in his garage, an attempt to interpret a jalopy dirt tracker. The demo Rodster rides on BFGoodrich T/A Radial 225/50-15 front tires and



To lower the front end, Caroselli prefers using an aftermarket dropped lower control arm, which is available from several manufacturers.

265/50-15 rear tires mounted on five-star wheels. Tokiko shocks replaced the stock units, and Caroselli drilled the brake rotors. The car was built on an '89 S-10 donor and weighs in at 500 pounds less than the sport ute. The base body kit retails for \$3,995, with a deluxe version selling for \$5,795. In addition to the fiberglass components of the basic kit, Caroselli adds a lighting package, window frame eliminator kit, body hardware kit, radiator kit, styling-bar kit, grille, battery relocater, lowering kit, and hood scoop.

Rebody kits like the Rodster make a lot of sense for a lot of people. Not only is the build less of a project, but the registration hassle is eliminated, and the donor car's engineering is put to its best use. Such thinking also typically leads to vehicles with good reliability, dependability, and a solid ride. **KC**

## SOURCE

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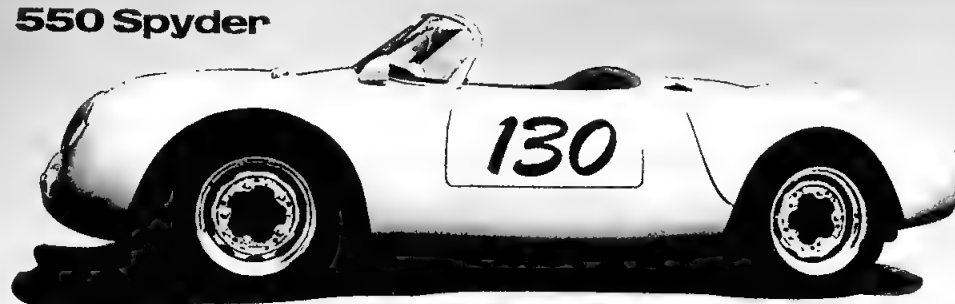
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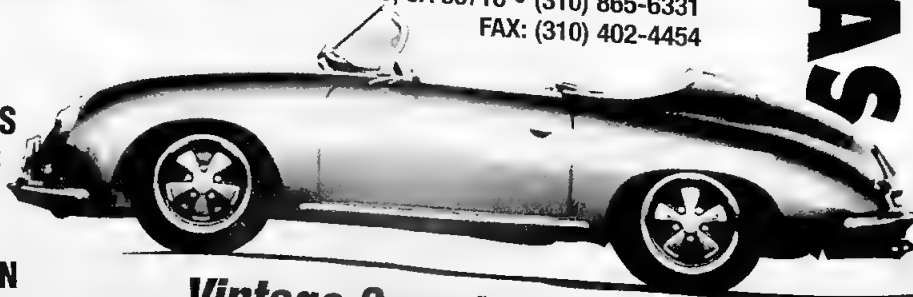


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PHOTOGRAPH BY AROLD PACE  
FOR BYGONE AVIATION

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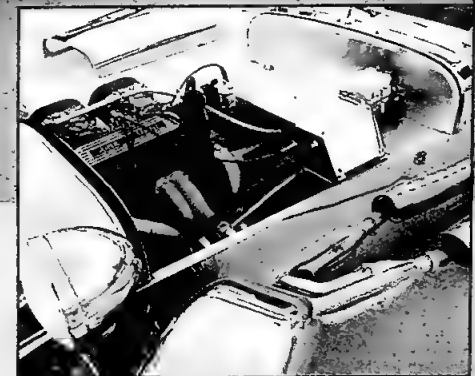
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early Lotus 7s had  
aluminum noses  
fenders. It was this  
that Texas Motor  
at Dick Brink sought  
with this one-off

started with a live-  
racing version of the  
ham Seven in kit  
The windshield was  
aced with Brooklands-

style aeroscreens. The fenders and  
nose were made up from aluminum,  
with the workmanship so perfect  
they could be polished and used  
without filling or painting. Along  
with all the other glitzen and  
blitzen, the bill came to a staggering  
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triple-pane goggles, and scarf should  
be made standard equipment. **KC**



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## BYGONE AVIATION

# THE SHINING

This Slick Lotus Seven From  
Caterham Is Truly a Knight  
in Shining Armor



■ By Harold Pace

**S**o, you've got about 40 grand to spend on a killer sports car. What'll it be? A new Vette? Naw. Too civilized. A clean used Porsche? Wrong magazine. How about one of those Caterhams? They're fast, loaded with classic looks, and handle like a rat wearing tennis shoes. But they only cost about \$25,000, so what do you do with the rest of your cash? Not to worry, gentle reader. Caterham dealer Texas Motor Works in Arlington, Texas, has come up with a package sure to stir your blood and lighten your wallet.

A "normal" Caterham (if there is such a thing) is equipped with a fiberglass nose and fenders coupled

with an aluminum hood and center section, just like the original Lotus Super Seven. The Caterham, is a continuation of the original Lotus, and not a replica. When Lotus stopped production, it sold the rights to Caterham, which had been the biggest dealer for the Lotus 7 (see *Kit Car*, Nov. '95). However, a few early Lotus 7s had been fitted with aluminum noses and cycle-type fenders. It was this configuration that Texas Motor Works president Dick Brink sought to emulate with this one-off special.

## SOURCE

**Texas Motor Works**  
Dept. KC  
P.O. Box 120982  
Arlington, TX 76012-0982  
817/461-5867

He started with a live-axle racing version of the Caterham Seven in kit form. The windshield was replaced with Brooklands-

style aeroscreens. The fenders and nose were made up from aluminum, with the workmanship so perfect they could be polished and used without filling or painting. Along with all the other glitzen and blitzen, the bill came to a staggering (for a Caterham) \$41,000.

The final look is more Supermarine Spitfire, or perhaps Gloster Gladiator, than automobile. It cries out for full aero regalia, and a leather helmet, RAF flight jacket, triple-pane goggles, and scarf should be made standard equipment. **KC**

PHOTOGRAPH BY HAROLD PACE  
FOR BYGONE AVIATION

# One

## PIECE AT A TIME

By David Fetherston

### Building a Cobra Replica on the Extended Payment Plan



If you are thinking about building a Cobra replica on a tight budget, then you'll be interested in this machine and the piece-by-piece method its builder employed to get it built. Unlike many kit builders, Jackie Nittler bought this roadster one piece at a time. He knew he wanted the car, but finding the cash to lay down all in one chunk was beyond his grasp. So Jackie chose another route by buying the pieces he needed one at a time.

Jackie chose to build a MidStates Classic Cars & Parts 427 Cobra replica, beginning with a bare chassis. He initially prepared it by adding an extra crossmember between the shock towers for a bit more rigidity. The 90-inch-wheelbase chassis arrived ready to accept the Mustang II frontend

assemblies, and Jackie picked up a complete '76 Mustang II frontend—with a V-6 engine as a bonus—at a local junkyard for \$70. That gave him the necessary suspension hardware, brakes, and rack-and-pinion steering setup he needed to get started. The steering column is a MidStates-modified Ford F600 truck unit that has the vintage looks to suit the replica.

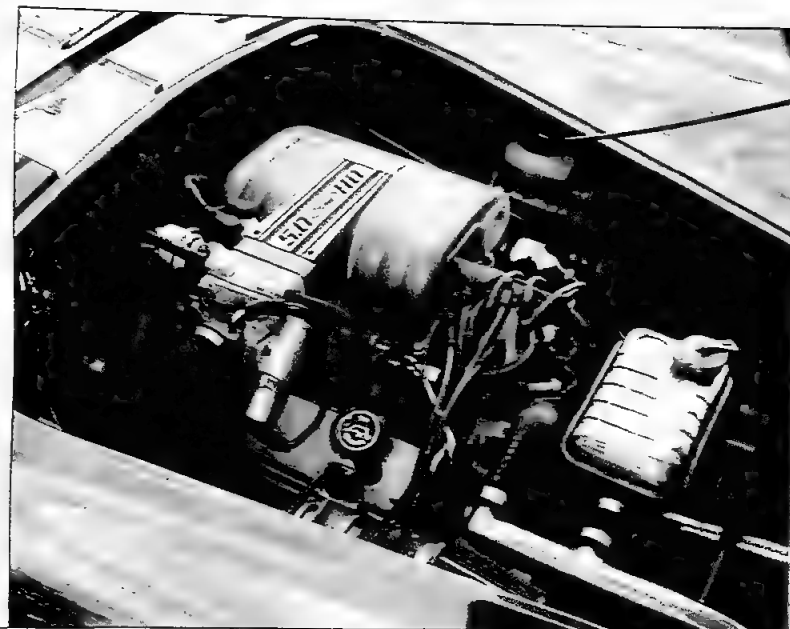
The rear end installation calls for coilover shocks on a 9-inch Ford Granada rear, an installation that required fabrication of the brackets. Jackie tackled this project himself using patterns purchased from MidStates. At this point, he went back to the salvage yard and sourced a set of Lincoln Mark VII rear disc brakes and, using a set of Watt's Engineering brackets, adapted them to the Granada axle.



The wheels are 15-inch Compomotive, 7 1/2 inches in the front and 10 inches in the rear. These he capped with Goodyear tires, 225-60s in the front and 265-50s in the rear.

Powering the roadster is an '89 Mustang LX 5.0 V-8. This engine had just 5,000 miles on it when Jackie purchased it complete with transmission, wiring harness, driveshaft, and all the accessories for \$1,250. With the help of his neighbor, he modified the engine wiring harness so the engine would run a closed loop complete with an oxygen sensor, map sensor, EGR valve, and a stock engine-management fuel-injection CPU computer unit. The exhaust is purged through a set of MidStates headers. The LX Mustang uses an in-tank fuel pump, but Jackie replaced it with an external Ford truck unit that is wired into the harness.

All of the LX Mustang accessory



use. The paint went on in two basecoats of Sikens Red with white stripes and a clearcoat finish over all.

The interior finished off the project—black automotive carpet, a leather dash panel filled with Stewart-Warner gauges, MidStates' traditional bucket seats covered in black leather with matching black leather side panels, and a four-point racing harness.

The project took two years from the first order to the final nut tightening. Jackie performed virtually all of the work himself, with help from the friendly folks at MidStates, a few friends, and some professional assistance for some of the

use. The car is road-raced in "run & gun" events, with several class wins and an assortment of Second and Third Place trophies collected.

Jackie has also been active in autocrossing with the car since it has been finished. In SCCA Sports Car Club of America autocross events, he has won several regional E Modified Class events but, as he notes, "I really love driving this car on a long road trip the best. It's only then you can really appreciate what pleasure there is in having built your own machine." ...Even if it was built one piece at a time. **KC**

#### SOURCE

MidStates Classic Cars  
& Parts Inc.  
Dept. KC  
835 W. Grant  
Hooper, NE 68031  
402/654-2772

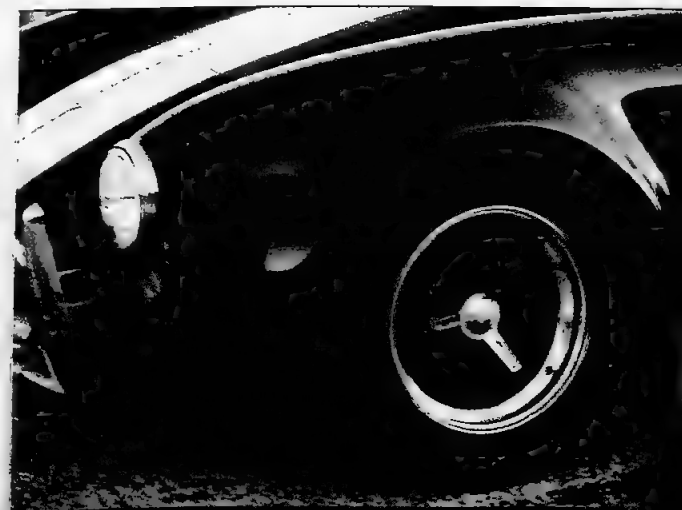
brackets were removed, and the engine is now cooled by a '90 Ford Taurus fan assembly that Jackie also altered and housed in a new aluminum fan shroud. The alternator is mounted using brackets from a Maverick.

The transmission is a stock Ford automatic AOD four-speed with the stock factory torque converter. It uses a transmission cooler mounted in front of the radiator from an '88 or '89 Ford Ranger pickup.

The body and its associated components were the last pieces Jackie purchased. The body came in gray gelcoat, and Jackie had already planned the color scheme he would

tougher procedures.

Jackie built the roadster to run and race, and he has actively pursued a variety of competitive venues with the replica. At the dragstrip, the roadster regularly turns a very respectable 13.732-second elapsed time at 97.97 mph, but that's only part of the racing story.





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# KIT TECH

By Jim Youngs

## Unknown Gear Ratio

I've heard that Ford has offered several gear ratios in the Mustang 8.8-inch rearend. If the tag on the centersection is missing, how do you know what ratio the axle has? Before I stick the unit under the car, I want to know what ratio I'm working with so that if I have to make a change, I can do it with the axle on the ground and not in the car.

John Jeffries  
Mobile, AL

*It is easier to change the gear ratio while the axle is out of the car. To determine the axle ratio,*



*make a mark on the disc-brake rotor or drum and a mark on the pinion or input shaft. Rotate the disc from a fixed reference point exactly one turn. If you count the number of turns that the pinion makes during this one revolution of the disc, you will have the ratio. For example, if you get 3.5 turns of the pinion per one turn of the disc or drum, you have a 3.55:1 gear set. If you get 3 1/4 turns, you have a 3.27:1 gear ratio.*

*When buying a donor axle, it's a good idea to determine the ratio, because it was common practice to swap gears in Mustang rearends to gain performance over stock setups.*

## Which Transmission?

I enjoy your magazine because it is helping me build a model of the '34 Ford five-window coupe I would like to build for real some day.

Which type of transmission would go well with a Ford 427 Cobra engine? I'm thinking of building it strictly all Ford and painting it black with a flame job. I also plan to have all Cobra instruments, along with a leather interior in either white or tan.

Here is the answer to what happened to the Ironsmith Bugatti kit, a question asked by several of your readers. The company hit a snare in production and couldn't keep up, so Ironsmith had to close its doors. The production costs started to outweigh the costs of staying in business.

Thomas Hepola  
St. Paul, MN

*If you're going all Cobra on the coupe, there is really only one choice: the Ford Top Loader four-speed. That was a natural marriage in the 427-powered Cobras and should work well for you. Actually, many transmissions would fill the bill nicely. A lot of street rodders, even those running big-block power, opt for an automatic tranny for cruisin' and the occasional boulevard blast.*

## VW Pans

I am planning on building a Porsche 356-replica kit car over the next 1-3 years, but I want to do it correctly. I live in the Chicagoland area, and I can't find a rust-free VW Beetle to be used as a donor car. I do not want to hastily buy a VW that would require many hours of rust repair (sandblasting of the chassis) and floorpan replacement. Can a person still buy just a VW pan? If so, please publish a few contacts that would help me in this situation. Also, if you could show how to shorten this pan to accommodate the Porsche body, I would love to see it.

I would also like to know your opinion on whether I should purchase a manual or auto-stick-type transmission for my particular situation. I have spoken to a VW "expert" who swears by the auto stick, but he bypasses all of the complicated linkages between operator and transmission by simply

using a good, old-fashioned clutch cable. If you have any information on this subject, please publish it. I would like to have the option of either a clutch or an automatic if I can have both.

I really enjoyed the article on the 356 that was published in the January issue. Please continue including articles/pictures on the classic foreign kit cars. Not all of us are Cobra/Thunderbird enthusiasts.

Peter Holschuh  
Franklin Park, IL

*There are several ways to get a good VW pan under your 356 Speedster. Look for a donor car outside of the rust belt. California, Arizona, and Nevada all have plenty of Beetles in great shape. You should also check with M&M Automotive Parts and Restoration (717/242-2270) and MoFoCo (800/553-8955), two companies with abundant VW parts and pieces, including pans and parts for VW pans. You didn't mention which 356 Speedster kit you were considering, but we recently visited Vintage Speedsters (310/402-4334) and saw a stockpile of VW pans, most of which had already been shortened for Speedster duty. You can also buy a brand-new tubular chassis to fit a Speedster from Metalcraft Products (313/728-1277). As for the Automatic Stick Shift transmission, it looks as if the linkages you referred to are actually electronic and solenoid controls that actuate the clutch. When you put your hand on the selector lever and move it, even slightly, you close the circuit to the solenoid in the servo mechanism that operates the Automatic Stick Shift clutch. This system allows you to select a drive range to allow a wider range of speed than a single gear in a manual transmission. It reduces the amount of shifting by 10 percent. We suppose your "expert" is correct—using a clutch cable might work with some fabrication for it to activate the solenoid, but it would also require a different pedal assembly, too. Our feeling is to have either a manual or Automatic Stick Shift*

## KIT TECH

(or a completely automatic transmission, which was offered on some late-models), both of which work well when properly maintained and adjusted.

### Tech Letter Omissions

Congrats on the editor job. The January issue looks very good. I expect the industry to get much more exciting now. You are now the first editor whom I knew before he was editor. I have bragged about that to all of my (nonkit-car) friends around here.

I have a comment on one of your answers in the Kit Tech column. On page 88 of the January issue, Rick Belz inquired about Fiero engine conversions. Included with the letter was a picture showing a nice V-8 engine in the back of a Fiero.

Three brief points about the letter:

1. You left out my company as a reference for firms doing V-8 engine swaps in Fieros. You have been here and seen my kits and know they



work. I consider myself a pioneer in that field.

2. The writer asks about "...many overheating problems." You've driven a couple of my converted cars and know that I've solved the water-temperature problems.

3. The picture included with the letter is a photo taken by the builder and owner of that car, Randy Poirier. He used one of my kits, and he is one of the happiest customers I've ever had.

I know that this column was written a long time ago, but I just wanted to set the record straight.

Archie Archambault  
V-8 Archie  
1307 Lykins Ln.  
Niles, MI 49120  
800/891-3608

Sorry, Archie. You are correct—the letter was a holdover from a previous issue and was run during the transition time before I arrived to sit in the editor's chair. We also apologize to Mr. Poirier for not giving him credit for the car in the photo. It's been a while since we blasted around Notre Dame in two of your test mules, but, judging by those red-head demonstrators, you certainly have figured out the engine cooling.

### V-8 Aztec 7

We are looking for back issues that have the Aztec kit car by Fiberfab with a midengine. Toronado transaxle with a Chevy engine. We would like to have a list of any magazines that show this vehicle in tech.

Street Player  
Oroville, CA

We won't ask why you want the stuff on the V-8-powered Aztec. Unfortunately, those old issues of Kit Car are only available at swap meets and used-book stores, and it may take a little searching to find them. The "Fiberfab Flyer" appeared in the '80 edition of Hot Rod's Kit Car Annual. In brief, Fiberfab offered a V-8 installation kit for the Aztec that allowed the use of an Olds Toronado or Eldorado transaxle coupled to a Chevy small-block and mounted on a VW chassis. Among other items, the conversion kit consisted of a square-

tube steel framework around the bottom perimeter of a Type III VW pan with a rear overhang extension to accept the mechanicals. Several modifications had to be made to engine components just to get the thing to fit—the bellhousing had to be notched to fit the starter, the oil pan had to be notched to clear the transaxle, and the gas tank filler had to be moved, among others. The scary part of the project showed stock VW drum brakes on the rear. We've come a long way, folks.

### SHO Me

First, I'd like to say thanks for answering so many technical questions. You have undoubtedly saved many amateur enthusiasts from wasting precious time and money. I'm about to embark on my first

hot-rod project. I could go the more realistic route and use a 5.0L Ford with its huge aftermarket following. The problem is that I'm truly fascinated by the Ford/Yamaha 3.0L, 24-valve V-6 SHO engine. I think it is one of the most aesthetically pleasing engines ever to be produced, not to mention its horsepower potential. My question concerns the engine's adaptability for a rear-drive platform. Are there any transmissions/bellhousings that are a direct bolt-on, and, if not, is it reasonably plausible to have a custom bellhousing created?

I understand you can't answer every question, but I'm at a major crossroad and could use some direction.

Joseph Herr  
Ft. Lupton, CO

You didn't say what rod configuration you are going to build, but here are some thoughts on using an SHO powerplant. Anything is possible, though we don't know of any bolt-on conversion kits for this package. People are always adapting unusual engines and drivetrains together, and the adapting gear is usually not all that difficult to build. We agree that the SHO is a neat-looking engine, and it certainly has some formidable power. We have even seen one street rod with the Ford hot-Taurus engine in the front driving the rear wheels, but we don't have any information on how it was done. You may also want to consider transplanting the whole SHO engine and transaxle into the rear of a rod, which would give you even more distinction. Thunder Ranch builds the Lightning, which was designed for a rear-engine/transaxle configuration. It is an all-composite-construction, stylized street rod resembling a '34 Ford, and we have seen several versions powered by Cadillac Northstar, Aurora V-8, and Lincoln Continental front-wheel-drive packages placed in the trunk—just something to think about.

### V-6 Fiero Swap

I am a recent subscriber to your magazine. The November issue contained the article "Camshafts and Performance," by Joe Greeves. Mr. Greeves indicated that he had spo-

ken with Mike Golding, product sales and training manager for Crane Cams in Daytona Beach, Florida. The article contained information on the Pontiac Fiero 2.8L V-6. In addition to the information on the camshaft for the 2.8L V-6, the article made this statement, "Finally, Crane suggests one other option for the 2.8L, and that's to swap in the brand-new 3.4L V-6 replacement engine that uses the same exterior dimensions. It comes with a GM performance camshaft already installed."

I, and probably many other readers of your magazine, would like to know the source and more information on this engine. Is this engine manufactured and sold by GM, or is it obtainable through an aftermarket source or specialty shop?

I own an '88 Mera and an '88 Pontiac Fiero Formula, both with the 2.8L V-6, and I'm interested in a little more performance without going to an engine conversion.

Merrill Bowles  
Edmond, OK

The engine you describe is a GM product, listed in the GM Performance Products catalog, and is available at GM parts dealerships. The 3.4L V-6 was actually designed as a replacement for the 2.8L engine in S-10 Blazers and pickups. It is a 60-degree V-6 offering a 20 percent increase in displacement over the 2.8L engine. It has an improved camshaft profile and valvetrain upgrades, which help it produce almost 40 hp more than the smaller engine. It is virtually a bolt-in replacement for the trucks but should be easily adapted to the Fiero gear.

### Needs Fiberfab Parts

I have a kit car made by Fiberfab, and I need some parts for it. Could you please furnish me with an address or phone number? The kit is a '51 MGB roadster replica.

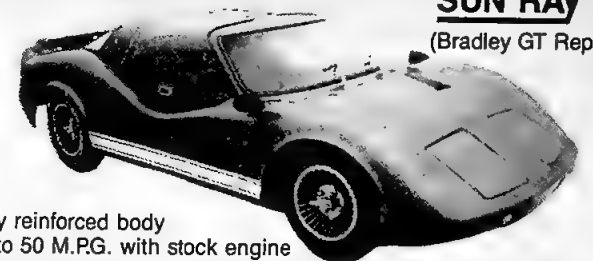
Louis Houghton  
Stevensville, MD

Fiberfab is no longer in business, and, as far as we know, no one is producing any components for the car you are asking about. Our best suggestion would be to find a kit-car club in your area. Someone in the club will doubtless have a Fiberfab kit and may be able to help you find what you need. You may also want to contact Prototype Research &

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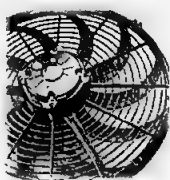
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78 KIT CAR

## KIT TECH

Development (705/653-4525), a company that builds a similar vehicle in kit form.

### Mid-Life Crisis

Your March issue of Kit Carchives included a brief mention of Mid-Engineering, which sold frames and plans in the '80s. I got a lot of information from the company back when it was in business, but I never got around to buying the plans. I would love to get a set of the company's blueprints. Can you or any of my fellow readers help?

Mark Van Zomeren  
2543 Henry Ave  
Pinole, CA 94564

Can anyone out there help Mark? We have lots of ads, but no blueprints. Anyone who has seen our welding knows they would not be safe in our hands.

### Record Breakers

I enjoyed the first installment of Kit Carchives about the Kelmark. Has any other kit car surpassed the 202.7 mph that the Mid-Engineering Kelmark set? Is Mid-Engineering still in business? If not, are there any companies that deal with Oldsmobile Toronado transmissions? I was thinking of putting one in a VW Beetle.

William D. Lawrence  
Glen Burnie, MD

Many kits have surpassed the times set by the Kelmark car. In 1953, the Guy Mabey Drilling Company Special ran a sizzling 203.105 at Bonneville to join the coveted 200-MPH Club. It used a sleek fiberglass kit body made by Victress and a potent 360ci Chrysler engine. Numerous other kit-bodied cars later went even faster. At



Bonneville last year, a special with a kit body made by Bocar of Denver, Colorado, circa 1958 made it over 220 mph before spinning out! It used a turbo big-block Chevy. Mid-Engineering is no more, and we

don't know of anyone selling Toronado transaxle pieces. However, there are numerous kits to bolt a variety of four-, six- and eight-cylinder engines to the Fiero transaxle. A 350ci Chevy/Fiero transaxle package should weigh less and produce more power (but perhaps less torque) than the Olds. Check out the ads in this issue for companies that sell conversions.

### Amante Identified

I know that from time to time you do research on unknown kit cars. I have enclosed a few pictures. Good luck. Thanks again.

Rob Wylie  
Redlands, CA

You are the proud owner of an Amante GT. First shown in 1969 as the "Gazelle," it was sold by Hebina Plastics in Santa Clara, California. By 1970, the car had changed names



to the Amante, and Hebina had changed to Voegle Industries. By 1971, the Amante still had the same name but was built by Performance Designers in Daytona Beach, Florida. Originally VW-based, the Amante was also offered with a simple midengine chassis propelled by Porsche, Corvair, or V-8 engines, with either VW or Corvair suspension. Voegle offered them in any form from basic to turnkey. The company also offered a number of variations on the nose, rear deck, and scoop design. Performance Designers only offered the VW version, which would fit the Bug, Squareback, or Fastback chassis. The front windshield is from a '66 Rambler (slightly altered), the rear glass was '66 Rambler Marlin, and the door glass was specially cut. A former Amante dealer told me it was one of the best kits on the market as far as fit and finish and ease of assembly went. A large number of Amantes were sold, so you may well run into other ones at kit-car shows. We are planning a Kit Carchives feature on the Amante in the future. **KC**

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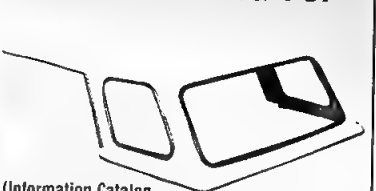
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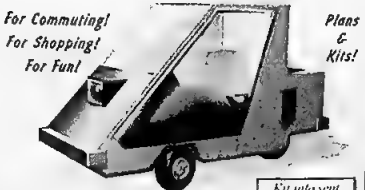
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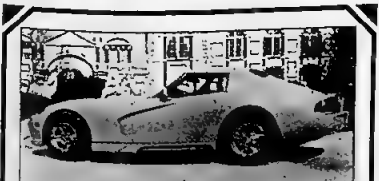
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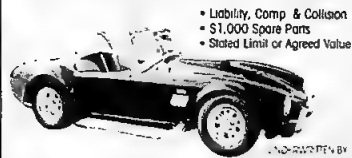
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# SHOW-OFF

## Sweat Equity

Jeffrey and Christie Guichard sent us a couple of photos of the results of their year of teamwork. Jeffrey writes, "My wife and I, like many other people, have read *Kit Car* magazine for several years and have always wanted to build our own kit car. However, being able to afford and build one was the hardest part." They finally decided to just take the plunge, and, as Nike says, "Just do it." The Guichards took a year to build the Stable Autoworks F250 kit in their spare time—a scarce commodity these days. The donor was a '75



Nissan 280Z. They redesigned the dash, covered "everything" in leather, and painted and color-sanded the finish themselves. Modified Honda door locks were added, as

was a stiffer and lowered suspension setup. The Guichards figure they have about \$16,000 invested in the replica, which they consider well worth the price since the car is such a dream to drive and show off. It has been in several kit-car shows and has won a First Place and a Second Place in the Ferrari class.

Jeffrey & Christie Guichard  
Lancaster, CA

## Artwork

We hear from Dan Lorenz that he recently took delivery of a true "work of art" and not necessarily simply a kit car.

He is justifiably proud of his new British Racing Green E.R.A. Cobra replica. The sports car wears tan leather hides with piping to match the green paint in the cockpit, black sidepipes, and street-style bumpers. Dan points out the lack of stripes, hood scoop, or rollbar, calling that treatment "the look of British simplicity." Dan, let us give you a little advice. Wait until that snow goes away before you try any 0-60-mph times. It's difficult to thaw out broad grins after such breezy runs.



Dan Lorenz  
Avon, CT

## Completed Classic

"I hope I can possibly inspire other Classic Motor Carriage owners to complete their Speedsters by showing off my car." Bob Elliott has put 10,000 "nice-weather miles" on his Classic Speedster. He was fortunate enough to actually receive most of his components, then spent six weeks assembling the car and getting it registered. He made some modifications to the kit, including relocating the shift lever back 4 inches and shortening the hand-brake lever, as well as improving the heat and defrosters. He also strengthened the rear body section to minimize door-gap flex using Vintage Speedster's ideas and used Beck Spyder bucket seats because he couldn't assemble Classic's seats, along with making several other modifications. Bob's Speedster is pushed by a 1,641cc engine fitted with some performance goodies, including a CB Performance Magnaspark and dual Weber 34mm carbs. Bob thanks wife Kathy and son Ryan for their support during the project.

Bob Elliott  
Hopedale, MA

## Rather Drive It

Curt Stenson sent along some photos of his newly finished Exotic Illusions Countach replica and said, "While many have said building is half the fun, I'm thrilled to say driving it is all that and more." Curt's car packs a 350 Chevy small-block coupled to a Pontiac Fiero tranny with help from a V-8 Archie adapter kit. Curt is also quick to point out that his kit-car project is proof that it can be done, and you can receive all the parts and help you need "...if you research and choose your suppliers wisely." We look forward to taking a look at this car at Carlisle, where Curt says he plans to show her off.

Curt Stenson  
Oxford, MI







### Gray Ghost

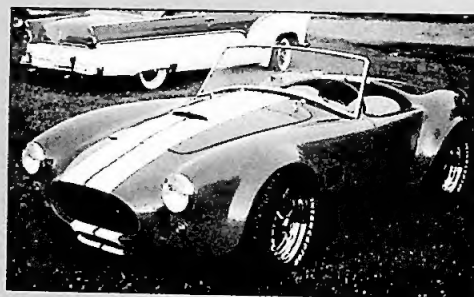
This is a shot of Joel Heinke's partially completed Classic Roadsters Cobra replica, and even in gelcoat it looks great. Joel's intention is to power the car with a 425hp small-block fitted with the best Ford Motorsports SVO

has to offer: a GT-40 EFI manifold, an EEC IV computer, fuel injection, a 70mm mass-air induction kit, an SOHC kit, Edelbrock aluminum Performer RPM heads, and plenty of other performance goodies. Joel hopes to use the car for several purposes, including autocrossing, road racing, drag racing, and, most importantly, the occasional trip across town for a jug of milk and a six-pack.

Joel Heinke  
Castro Valley, CA

### Little Red

Not only did Ken Ramage write and illustrate a book about building his car called *The Story of the Little Red Cobra*, but the thing has a monster air-brushed mural of the scaly variety of snake on the underside of the hood. Ken spent about 150 hours building the Antique & Collectible



Autos kit and powered it with a '72 Ford 360 V-8 fitted with all sorts of performance goodies, including an Edelbrock intake, a Holley carb, and TRW pistons. Ken is obviously proud—and justifiably so—of his project, but he gladly shared a little story with us. The first trip out of the garage, the car's throttle stuck wide open, and he nearly hit some parked vehicles on the lawn. We're sure he's glad that the Cobra didn't become permanent side trim on that '55 Victoria. The interior of the car is also novel in that it has a handcrafted walnut instrument panel and console. The exterior is void of sidepipes.

Ken Ramage  
Olean, NY

### Grand National Cobra

It took John Spina about eight months to build this unique Everett-Morrison Cobra replica. We say "unique" because it is powered by a Buick Grand National turbocharged V-6 engine. John admits that it



was somewhat of an engineering feat, particularly modifying the wiring harness, which involved 211 separate terminals in about 50 connectors to accomplish. It runs in a closed loop using a stock Buick ECM, has emission controls, and gets 24 mpg on the highway. Additionally, the car has run 11.80 seconds at 115 mph in the quarter-mile, and that's with a single exhaust and street tires. The E-M has Corvette suspension components, tires by Michelin, a GM automatic transmission, and Composite three-piece Cobra-replica wheels.

John Spina  
Vernon Hills, IL



### Just Grand

This is a kit-car project we've been waiting to see, and, while we have a full feature on it planned for an upcoming issue, we couldn't resist giving you a glimpse. John Hinckley is a guy who works real close to Vipers and Prowlers and has built himself a Chevy. Actually, his car is a D&D Grand Sport replica with details enough to keep a bean-counter busy for days. The Hinckley car wears all the correct original-style meatballs and decals and has a license plate that reads ZORAS63, for the father of this famous race car. John tells us that since it was finished it took home all the marbles in a 300-car Labor Day car show—1st in Class and Best of Show (with a trophy that could barely fit in the car for the trip home)—and gathered lots of admiring fans and some no-holds-barred cash offers at the big Woodward Cruise in Detroit. More later....

John Hinckley  
Rochester, MI

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